

PURCHASING

APRIL, 1951

TECHNOLOGY NEWS
PUBLIC LIBRARY
APR 11 1951
DETROIT

Cover photo, Bruce Henderson.....	see page 71
TABLE OF CONTENTS	page 5
Can't Measure Purchasing?.....	page 73
Subcontracting	page 77
Working with Controls	page 79
Materials and Design	page 101
Purchase System in a Card File	page 115

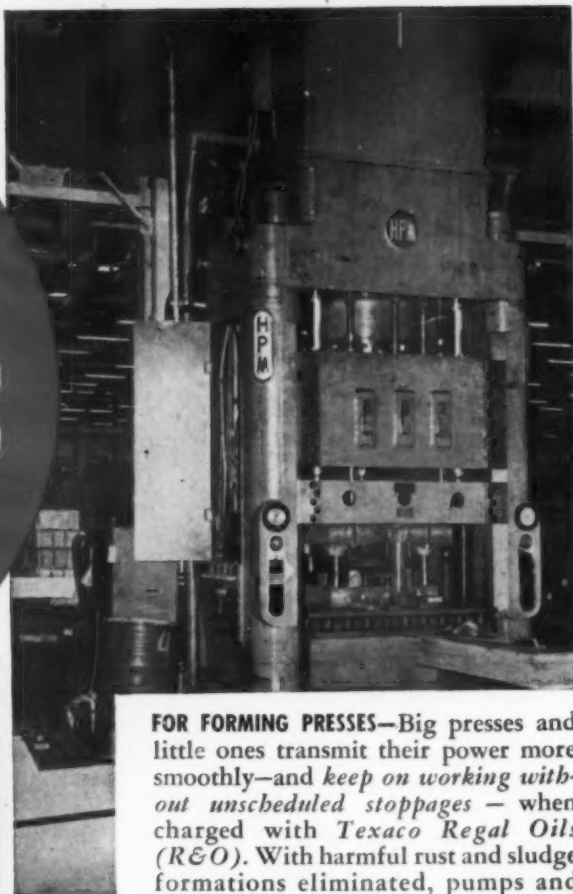
✓R v.30² April - June 1957

Use Texaco Regal
Oils (R&O) and
assure

UNFAILING HYDRAULIC POWER



FOR MACHINE CONTROLS — Unlike ordinary oils that have a tendency to foam and cause erratic motion, *Texaco Regal Oils (R&O)*—specially processed to prevent foaming—assure smooth, even motion for the most delicate adjustments. This is important in maintaining high production of top quality work and in reducing rejects.



FOR FORMING PRESSES—Big presses and little ones transmit their power more smoothly—and *keep on working without unscheduled stoppages*—when charged with *Texaco Regal Oils (R&O)*. With harmful rust and sludge formations eliminated, pumps and valves stay clean... wear is greatly reduced... maintenance costs come down.

FOR MATERIALS HANDLING — World's largest ram truck lifts and carries 30-ton loads... its hydraulic system works perfectly with *Texaco Regal Oils (R&O)*. These turbine-quality oils keep hydraulic systems free of rust, sludge and foam... give longer service between oil changes. Get the same cost-reducing results for *your* lift trucks, large or small.

For every hydraulic use

Leading hydraulic equipment manufacturers approve *Texaco Regal Oils (R&O)*, and you can get the exact viscosities you need to assure best possible

performance from every type and size of hydraulic unit. Let a Texaco Lubrication Engineer give you full details. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street,
New York 17, N. Y.



TEXACO Lubricants, Fuels and Lubrication Engineering Service

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. See newspaper for time and station.

Teach

Century

Serves the Electric Motor User in Two Important Ways:

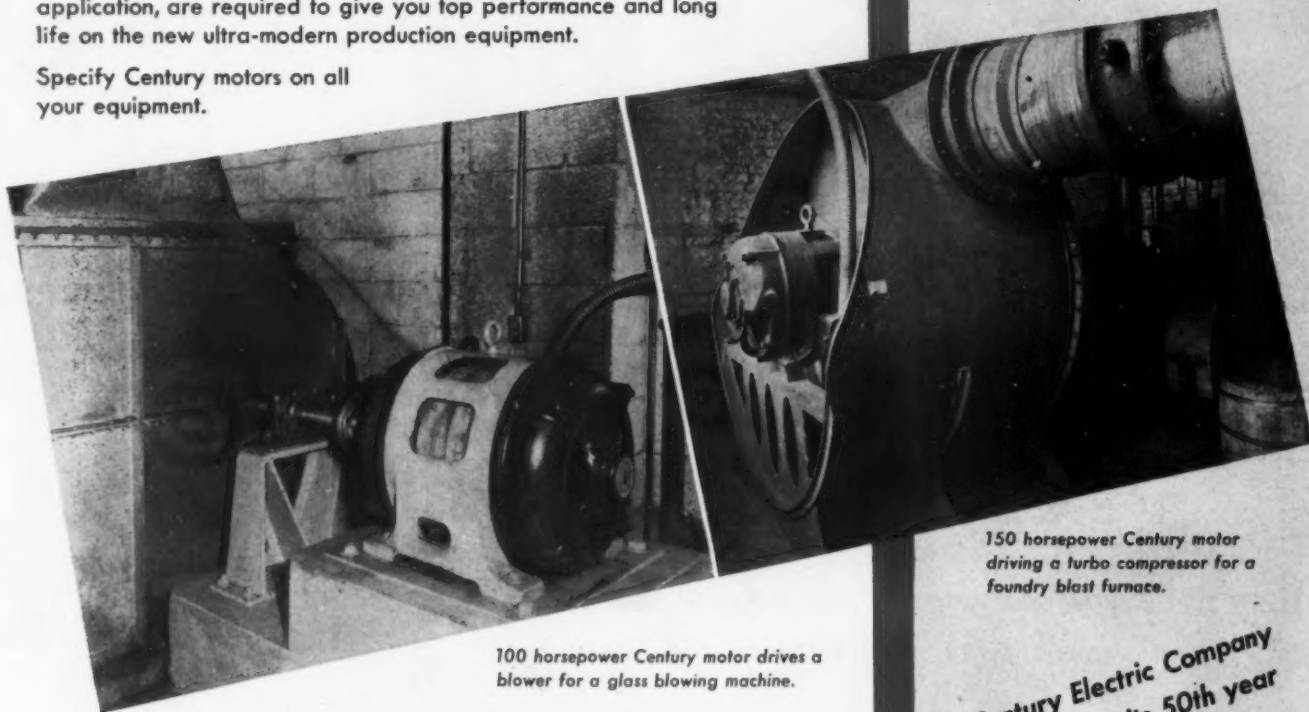
1. Century motors are designed and constructed for a long, dependable operating life.
2. Just as important—they are skillfully selected to match the operating characteristics of the many kinds of equipment they drive.

IN CENTURY'S wide range of types and sizes (up to 400 H.P.) there are available: 4 standard classes of starting torque characteristics—6 methods of speed control—constant and short time ratings—4 basic classes of frame protection against atmospheric hazards—a dozen methods of mounting the motor to the equipment—plus many special specifications to meet the requirements of the BIG NAME equipment manufacturers who use Century motors as a component part of their equipment.

Teamwork with equipment producers gives you skillfully selected motors from Century's wide range of types and sizes... properly applied to match the performance characteristics of the machines they drive.

Both a properly designed and constructed motor, plus skillful application, are required to give you top performance and long life on the new ultra-modern production equipment.

Specify Century motors on all your equipment.



100 horsepower Century motor drives a blower for a glass blowing machine.

150 horsepower Century motor driving a turbo compressor for a foundry blast furnace.

Century SERVICE Is Near Any CENTURY Motor Driven Equipment

Satisfactory performance of CENTURY products is assured by more than 200 CENTURY Authorized Service Stations supervised by 28 CENTURY Sales Offices.

1. Facilities for immediate exchange of most CENTURY standard ratings of standard construction are available at CENTURY Authorized Service Stations.
2. CENTURY Authorized Service Stations are qualified and equipped to service and repair any piece of CENTURY apparatus.
3. Genuine CENTURY renewal parts are available at CENTURY Service Stations, CENTURY Parts Distributors and at the factory in St. Louis.

Century Electric Company
is celebrating its 50th year
in the electrical industry

CENTURY ELECTRIC CO.

1806 Pine St. • St. Louis 3, Missouri

Offices and Stock Points
in Principal Cities



704

RESEARCH KEEPS

B.F. Goodrich

FIRST IN RUBBER



This hose handles 85% of all air hose needs

*May save you days of waiting for special hose
and save you money too*

IF your company had 100 different uses of air hose, this hose would, on the average, do 85 of those jobs—and last longer doing them than other air hose. It's B. F. Goodrich Type 50 air hose—for shop tools, air tampers, light and heavy portable compressors, air hoists, ore mining and quarry service—or, as we say, 85% of all air hose requirements.

Saves waiting—In normal times every B. F. Goodrich distributor has Type 50 hose for immediate delivery. You don't have to wait for special

kinds of hose; you don't hold up important production. Even in periods of shortage it may save you time because your distributor may get it for you much more quickly.

Oil won't rot it—This Type 50 air hose has a tube that won't break into loose, gummy particles, clogging up tools. The cover is oil-resisting too. Workers with oily hands or gloves can handle it, use it near oily machines and surfaces.

Rough treatment won't tear it—On almost any job, air hose has to be

dragged over rough surfaces, always in danger of costly tears, breaks, snags. The cover of B. F. Goodrich Type 50 air hose is abrasion-resisting. Scraping over rock, rough floors, cinders or roads won't tear it. Won't check or crack from constant sunlight.

Your local BFG distributor has all the details and prices on Type 50 air hose. Give him a call, or write *The B. F. Goodrich Company, Industrial & General Products Division, Akron, Ohio.*

Air Hose
BY
B.F. Goodrich

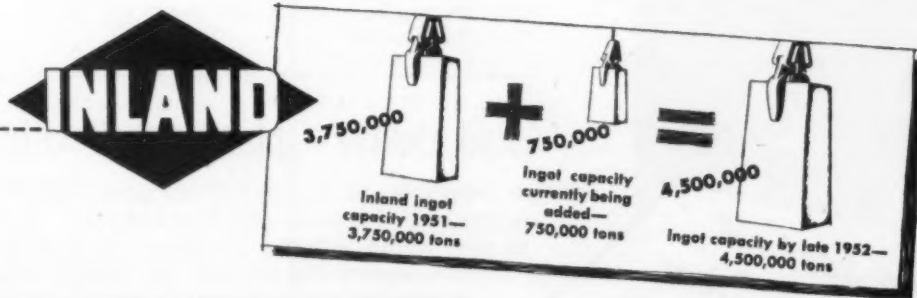


It's the fellow with the long white whiskers and the "DO" engraved on his brief case. He's asking for a lot of our steel. And he's getting it.

While his purchases may hurt some of our regular customers, we're far from reluctant to help him out . . . for we want him to be ready to do whatever is required, if and when Uncle Joe starts the fireworks.

More scrap
from you...
means more
steel for you

In the meantime, we're building so that he, and all of our friends in the midwest, will have more steel.



INLAND STEEL COMPANY. 38 South Dearborn Street, Chicago 3, Illinois

Principal Products: Sheets, Strip, Tin Mill Products, Bar Mill Products, Plates, Structural Shapes, Floor Plate, Piling, Reinforcing Bars, Rails and Track Accessories, Pig Iron, Coal Chemicals.

Sales Offices: Chicago • Davenport • Detroit • Indianapolis • Kansas City • Milwaukee • New York • St. Paul • St. Louis.



FRESH AIR

freshens production, too

Remove fumes, heat, dust with ILG units

Employees are more comfortable and more efficient when there is proper and adequate ventilation. ILG blowers and fans — distributed by Graybar — are the most efficient, best-built units you can buy. All ILG equipment is built on the "exhaust" principle and designed to provide complete and frequent air change. For each of your ventilating needs, there's a standard unit that's "made for the job."

PRODUCT VENTILATION; HEATING, DRYING UNITS

Graybar distributes the proper equipment not only for ventilating any room — or your entire plant — but also for built-in ventilation of products. In addition, Graybar has unit heaters for space heating or drying . . . plus all the accessories you need, including controls and wiring supplies. If you or your electrical contractor would like help in determining the best ventilating system for your conditions, call our nearest office and ask for a free survey of your plant.

Convenient source for everything electrical

Graybar distributes more than 100,000 electrical items for wiring, lighting, communication, power, and all your other electrical needs. Graybar Specialists are on call to help solve difficult problems.

Avoid delays—plan ahead with Graybar

Job delays due to unexpected shortages of electrical supplies are both annoying and costly. That's why you'll find it profitable to plan ahead with the assistance of your local Graybar Representative. He not only can furnish accurate catalog information and quotations on any electrical items — you can rely on him also to work out and stick to practical delivery schedules, subject to defense priorities and regulations. Graybar Electric Company, Inc. Executive offices: Graybar Bldg., New York 17, N. Y.

144-174

*You get the best of
everything electrical
Via Graybar*

IN OVER 100 PRINCIPAL CITIES

PURCHASING

The National Magazine of Industrial Procurement

VOL. 30, No. 4

APRIL, 1951

STUART F. HEINRITZ.....Editor

B. P. MAST.....Chairman of the Board
HARVEY CONOVER.....President and Treasurer
A. M. MORSE, JR.....Vice President and Manager
A. H. DIX.....Vice President, Research
GILBERT B. FERRIS.....Secretary

EDITORIAL STAFF

GEORGE E. HENRY.....Associate Editor
PAUL V. FARRELL.....Associate Editor
A. N. WECKSLER.....Washington Editor
L. E. MCMAHON.....Production Manager
E. C. ARINK.....Art Director
DAVID BURKE.....Associate Art Director

ADVERTISING REPRESENTATIVES

ALEX G. GRAAM.....New York
RAY RICHARDS.....New York
C. R. KINGSLEY.....New York
WAYNE W. GEYER.....Chicago
H. L. PELOTT.....Chicago
RICHARD C. GROVE.....Cleveland Manager
FORREST C. PEARSON.....West Coast Manager
EDWARD M. BUCK.....Southern Representative

EDITORIAL AND EXECUTIVE OFFICES

205 East 42nd Street, New York 17, N. Y.

BRANCH OFFICES

737 NORTH MICHIGAN AVENUE.....Chicago 11, Ill.
435 LEADER BUILDING.....Cleveland 14, Ohio
5478 WILSHIRE BLVD.....Los Angeles 36, Cal.
4552 RHENISH PLACE.....Dallas 5, Texas
NATIONAL PRESS BUILDING.....Washington, D. C.

Published monthly by Pease, Inc.
Subsidiary of

CONOVER-MAST PUBLICATIONS, INC.
Printed at Orange, Conn.

CONOVER-MAST PUBLICATIONS

PURCHASING

AVIATION AGE

MILL & FACTORY

CONOVER-MAST PURCHASING DIRECTORY

LIQUOR STORE AND DISPENSER

CONSTRUCTION EQUIPMENT

PURCHASING is an independent journal, not the official organ of any association. Established 1915 as "The Purchasing Agent". Consolidated with "The Executive Purchaser".

Contents are indexed monthly and annually by the Engineering Index Service.

Subscription rates: United States, U. S. Possessions, and Canada: \$4 per year; elsewhere, \$6 per year. Single copies, 50¢.



APRIL, 1951

Not More Dollars—but Better Dollars	67
Purchasing Agents at the Crossroads	B. D. Henderson 71
Washington Alphabet	72
Can't Measure Purchasing?	S. F. Heinritz 73 ✓
PURCHASING Reports on Purchasing Opinion	
Can Subcontracting Solve Purchasing and Production Problems?..	77
Working with Controls	A. N. Weeksler 79
How Buick Streamlines Purchasing	D. G. Baird 81
Purchasing Equivalents	E. L. Cady 87
How to Buy Cellular Rubber	J. J. Corrigan 90
Infrared Lamps at Work	C. E. Egeler 92
British Socialism Is on the Decline	W. F. Rockwell 96
Purchasing Looks at Management	H F. Jones 97
Steel Industry Raises Its Sights	E. L. Shaner 99
Not Enough Copper for All	J. Zimmerman 100
Influence of Materials on Equipment Design.....	R. C. Bergvall 101
Where We Stand	
Commodity and Business Trends	103
Commodity Delivery Information	105
Proved Policies of Inventory Control	B. D. Henderson 111
Purchase Order System in a Card File	R. K. Spofford 115
Fair Labor Standards for Purchasing	
How Interstate Commerce Laws Affect Purchasing	Leo T. Parker 120
Selecting and Maintaining Lighting Equipment	G. S. Ketter 184

MONTHLY FEATURES

Purchasing Previews	13
Late Trade Bulletins and Catalogs	19
F. O. B.	30
Highlights	67
New Products — Ideas	130
Office Equipment and Supplies	181
Among the Associations	210
Personalities in the News	272
Letters to the Editor	336
Buyer's & Seller's Mart	338
Index to Advertisers	340

BIG JOBS
from
BIG PRESSES

ERIE RESISTOR'S

great modern facilities
and proven know-how
mean better molded
plastic parts for you



One of a series of advertisements describing Erie Resistor's complete facilities for quality custom molded plastics.

● Two huge injection molding presses, each capable of molding 80 ounces of polystyrene, supplemented by a new 48 ounce press, enable Erie Resistor to mold the largest pieces ever shaped by the injection molding process. And, through the use of multiple dies, they speed production of smaller parts.

Erie Resistor, pioneer in custom injection molding, has long enjoyed a reputation for taking up where others leave off, for an ingenuity in finding ways of doing what others said couldn't be done. With expanded facilities Erie's know-how will have even greater opportunity to serve you.



Plastics Division
ERIE RESISTOR CORP., ERIE, PA.
LONDON, ENGLAND . . . TORONTO, CANADA



WHAT TOOL spreads man-hours farther?

...The right brush! To cover more ground with existing maintenance man-hours, be sure your painters are equipped with the correct painting tools from Osborn's complete line of fast-working, top-quality paint and varnish brushes.

Built for industry by the company that knows industry's problems, each type of brush in Osborn's line is designed for efficient use on a specific class of work . . . to last longer, hold more paint, cover areas more uniformly, save painters' time and effort, thereby cutting maintenance costs.

To simplify your buying, specify Osborn on all brush requirements and order from your Industrial Distributor along with other mill supplies. *The Osborn Manufacturing Co., Dept. 435, 5401 Hamilton Ave., Cleveland 1, Ohio.*



LOOK FOR THE NAME OSBORN . . . RECOGNIZED EVERYWHERE
FOR QUALITY WORKMANSHIP AND MATERIALS

Ideas on the care and keeping of brushes

GOVERNMENT restrictions now limit the percentage of pure bristle that can be used in the manufacture of paint brushes. In spite of these limitations, however, your new Osborn brushes will provide you satisfactory performance when given proper care and attention. The following guide shows what basic steps can be followed in maintaining the efficiency of your brushes.

1. *Before using* soak a new brush in raw linseed oil at least twenty-four hours.

2. After removing excess oil, dip the brush into the paint, allowing the paint to penetrate to *half* the length of the bristle.



3. Remove excess paint by drawing the *flat* side of the brush over a wire fastened across the top of the paint can.



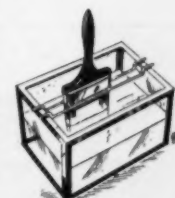
4. Brush the bristle ten or twelve times across a rough surface to remove any loose hairs.

5. For best coverage when painting, hold the brush at a 45° angle to the surface, using the flat side of the brush from the tip to half the length of the bristle.

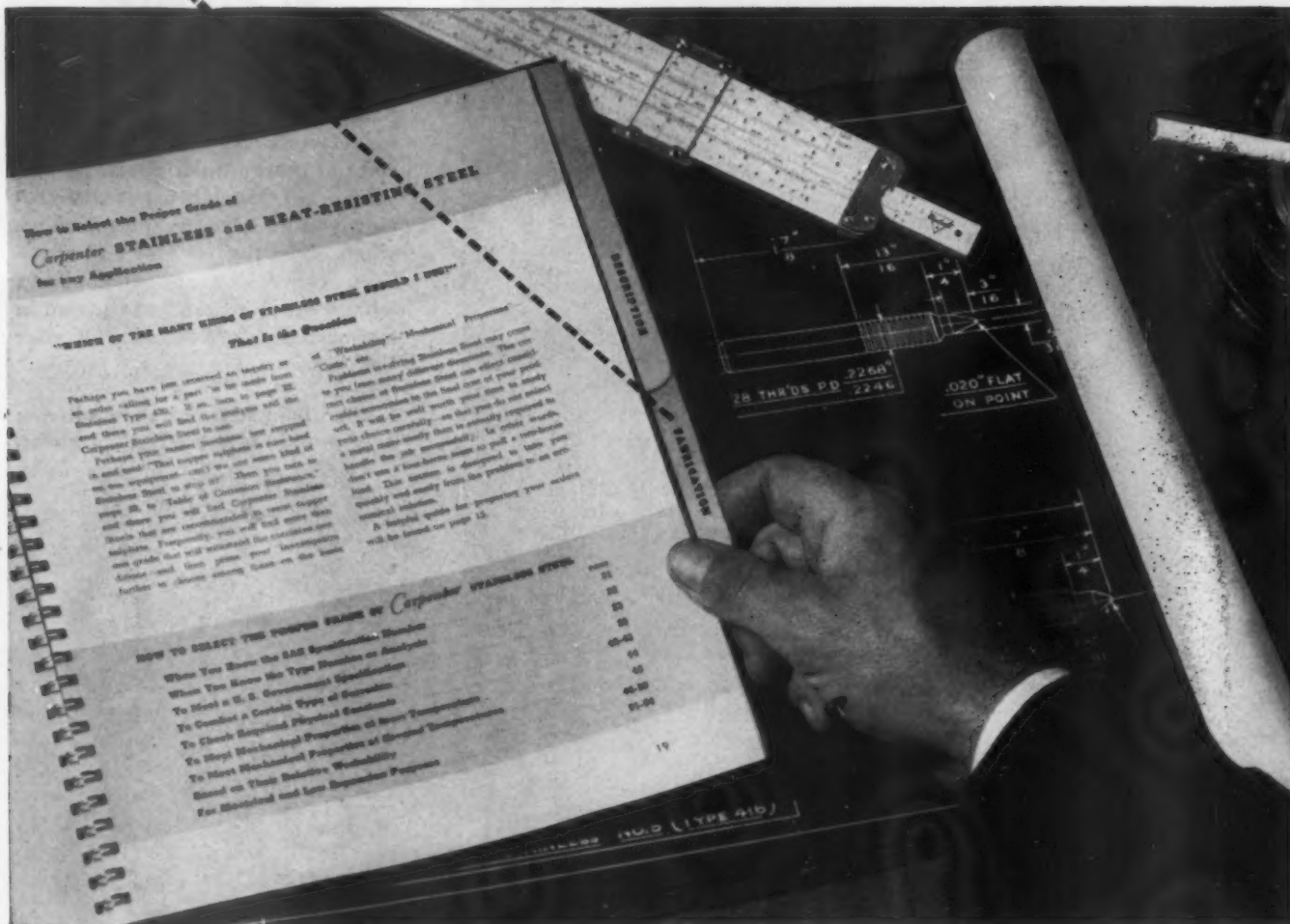


Clean the brush thoroughly, immediately after using

6. Use turpentine, benzine or gasoline to remove paint or varnish; alcohol to remove shellac; water to remove water paints; lacquer thinner to remove lacquer.



Wrap brush in a heavy kraft paper and suspend in linseed oil. *Do not stand brush on bristle end.*



Where You'll Find Answers to Your Questions about Stainless

We've taken our own experience in making Stainless—added a lot that we've learned about fabricating Stainless—and put it in this 133-page Working Data Book.

To put this book of combined experience to work for you, to get a greater number of perfect parts from every pound of

Stainless you buy, call your Carpenter representative and ask for a copy of the Stainless Working Data Book. If you don't already have a copy, he'll be glad to give you one. And when you talk to him, put him to work on any special problems you may have. He knows a lot about Stainless. And he is backed up by mill men who have spent their lives

digging for ways to do Stainless jobs better.

Make full use of Carpenter's service to users of Stainless. Call your nearest Carpenter office today for a copy of "Working Data for Carpenter Stainless and Heat Resisting Steels" . . . or for personal attention to a specific problem.

The Carpenter Steel Company, 182 W. Bern St., Reading, Pa.
Export Department: The Carpenter Steel Company, Reading, Pa. — "CARSTEELCO"

Carpenter



STAINLESS STEEL

takes the problems out of production

For Easy-to-Use Stainless Call Carpenter. Warehouses in principal cities throughout the country.

Up to 35%
greater production,
much longer tool life

with

GULF "LASUPAR" and "ELECTRO" CUTTING OILS



Why have users of the new Gulf sulphurized cutting oils been able to step up feeds and speeds on tough machining jobs? Because, thanks to a special Gulf process of combining sulphur, Gulf Electro and Lasupar Cutting Oils provide greater sulphur activity over the entire range of a cutting operation.

This intensified chemical action insures better protection for the tool at elevated production rates—helps reduce built-up edge, prevents chip welding, prolongs tool life.

Because Gulf Electro Cutting Oil contains a larger percentage of this extremely active sulphur ingredient,

it is recommended for the toughest machining jobs, where production and tool life are problems.

Gulf Lasupar Cutting Oil also contains stable sulphurized fatty oil, effective in producing the fine finishes for which this quality cutting oil is so well known.

Operators everywhere welcome the new Gulf Lasupar and Electro Cutting Oils—because they get all these production advantages without the disagreeable odor ordinarily associated with sulphurized cutting oils.

Call in a Gulf Lubrication Engineer today and arrange to use these outstanding oils in your shop. Or send the coupon below for additional information.



Gulf Oil Corporation • Gulf Refining Company
3-SZ Gulf Building, Pittsburgh 30, Pa.

P

Please send me, without obligation, a copy of each of your new pamphlets "Gulf Lasupar Cutting Oil," "Gulf Electro Cutting Oil."

Name.....

Company.....

Title.....

Address.....

THAT P&H AC WELDER LOOKS
GOOD TO ME, JIM. WE CAN
GET IT OFF THE FLOOR
—AND HAVE MORE
ROOM TO WORK!

THAT'S RIGHT, BILL— AND WITH
CONTROL AT THE WORK WE
GET MORE DONE, AND
DO IT BETTER!



ADDITIONAL FEATURES OF P&H AC ARC WELDERS

- Easy, quick-start arc
- Stable arc
- No arc blow
- Continuous, step-less amp control
- High electrical efficiency for lower power costs
- Connectable to 220 or 440 volts
- NEMA rated



Excavators • Overhead Cranes • Hoists • Arc Welders and
Electrodes • Soil Stabilizer • Crawler and Truck Cranes
• Diesel Engines • Cane Loaders • Pre-assembled Houses



2257

Save floor space, cut welding time for more production at lower cost ... use P&H AC Arc Welders with exclusive Dial-lectric remote control

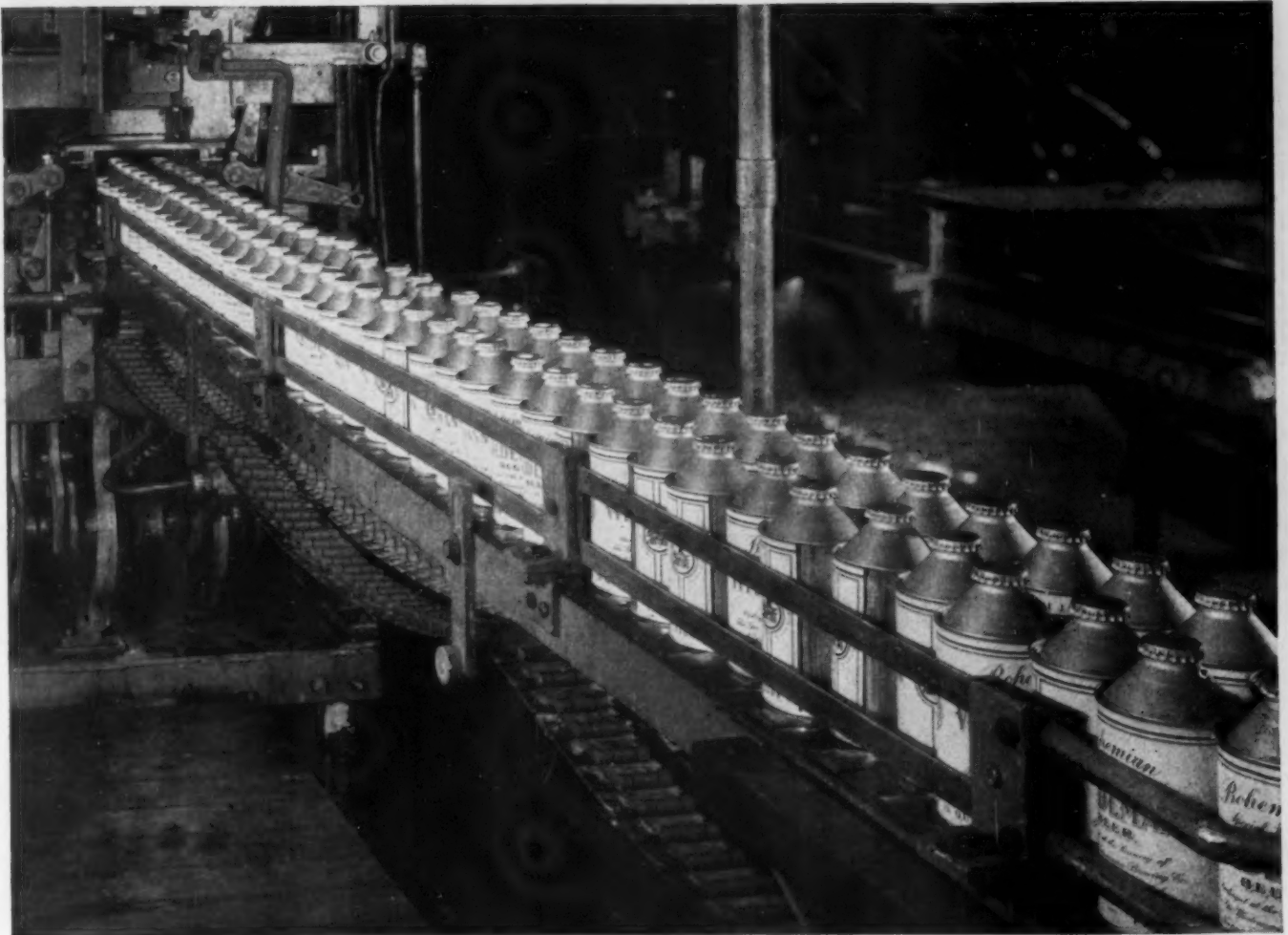
Give yourself more room for your production needs. Mount your P&H Welder off the floor, out of the way.

Dial-lectric remote control lets you do this. Your operator can turn the heat on *at the work*. It also cuts down his "walking time" ... turns it into *welding time* for increased output.

Besides saving space P&H Dial-lectric control eliminates cores, coils, sprockets, gears and other moving parts that cause excessive maintenance and downtime.

P&H AC Welders are available in a full range of sizes up to 625 amps. See your P&H representative or distributor for full details on how this outstanding welder can save you time and money.

no ONE chain serves every purpose



S-815 flat top chain carrying cans of beer at The George Wiedemann Brewing Company, Newport, Ky. This sturdy, economical medium is easily kept clean and assures a smooth ride for such products.

LINK-BELT offers the RIGHT chain for every job...engineered to meet your requirements

Typical conveyor chains from the complete Link-Belt line



Class RC crescent flat top chain—travels in horizontal planes, around corners; ideal for bottles and cans.



Class 400 swivel chain—carries cartons, cases, etc. over paths with both vertical and horizontal turns.



Class RC flat top chain—precision made for smoothest, spill-free carrying and long life.



Class RC universal crescent flat top chain—travels in multiple planes, so one conveyor can replace several.

Link-Belt offers no single "cure-all" chain to handle every job. From the most complete line of chains and sprockets in the world—we can recommend the *exact* type to fit your particular job requirements—cast, combination, forged, SS, roller or silent for every conveying and power transmission service. So, whatever your chain problems, big or small, Link-Belt engineers will work with you or your consultants to help solve them.

LINK-BELT COMPANY, Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities.

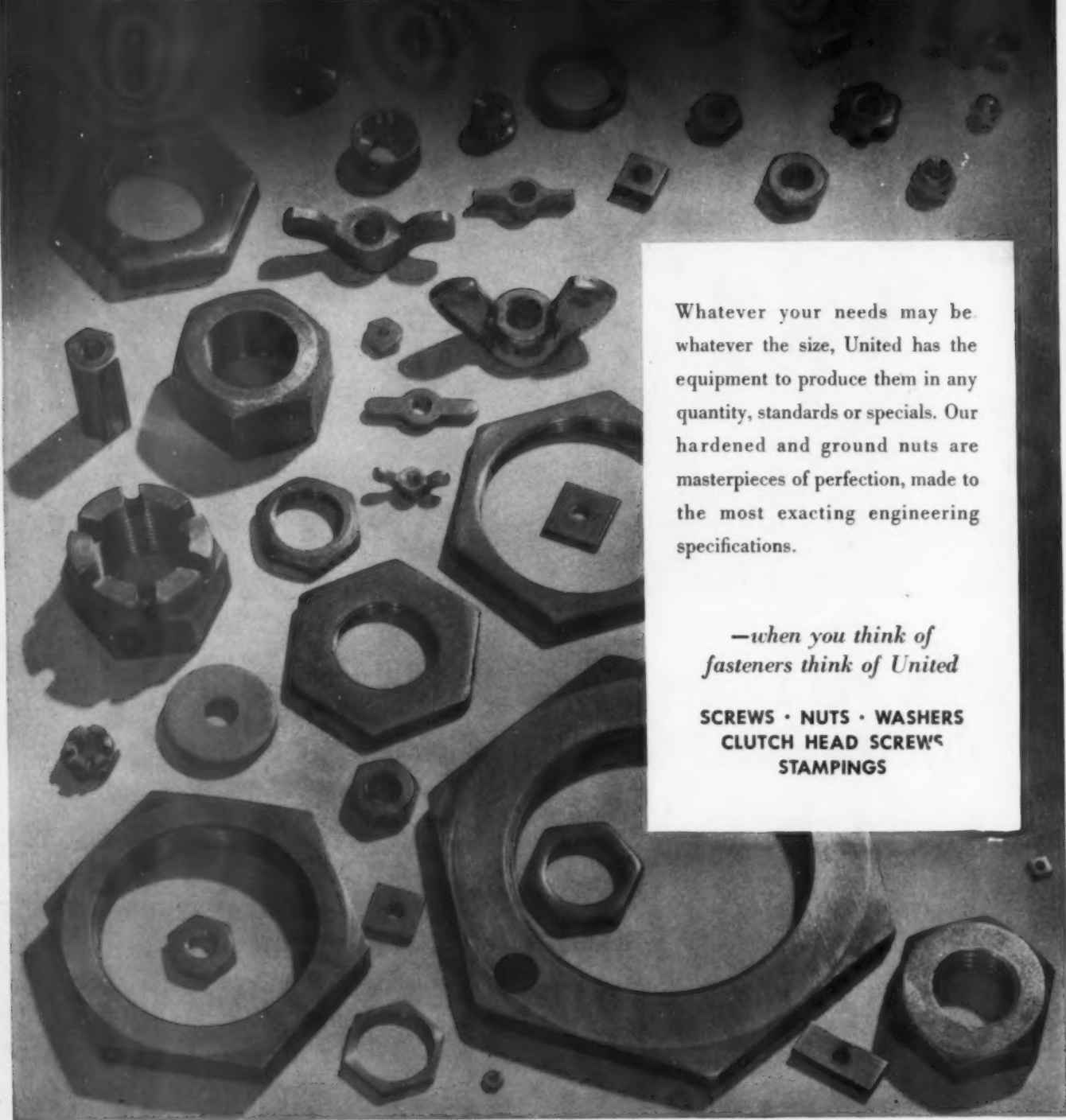
12, 208-A

LINK-BELT

CHAINS AND SPROCKETS

UNITED

PUNCHED NUTS MILLED NUTS
HARDENED AND GROUND NUTS



Whatever your needs may be, whatever the size, United has the equipment to produce them in any quantity, standards or specials. Our hardened and ground nuts are masterpieces of perfection, made to the most exacting engineering specifications.

*—when you think of
fasteners think of United*

**SCREWS • NUTS • WASHERS
CLUTCH HEAD SCREWS
STAMPINGS**

United Screw and Bolt Corporation

Chicago 8

Cleveland 2

New York 7

PURCHASING PREVIEWS

A WASHINGTON REPORT FOR PURCHASING AGENTS

April 2, 1951.

PRIORITIES IN STOPGAP STAGE AWAITING CMP

Government action is now aimed at a general tightening of controls—seeking to plug the loopholes in the wide range of regulations which have been issued, and generally pointing the economy into a more advanced stage of mobilization.

Example is the "DO" rating system, which was recognized at its inception as impractical. It is significant that within weeks after the "DO" system of priority was initiated, work was begun to develop an allocations program—a Controlled Materials Plan.

The "DO" rating plan served one simple purpose . . . it gave military orders an initial priority, so that producers of military items could break into mill and fabricator schedules to place their purchase orders.

However, the "DO" system began breaking down only a short time after it was put into effect, and "directives" became necessary where ratings did not assure delivery.

When the "DO" rating system was made available to civilian industry and business on a very unrestricted basis through issuance of the broad Maintenance, Repair and Operating Supplies Order (MRO), it became obvious that the "DO's" would soon be ineffective—that it would be a race with time to hold the "DO" rating system together through patchwork adjustment until an allocations program can be put into effect.

SETTING UP OF CMP POSES DIFFICULTIES

The allocations program—CMP—cannot automatically insure the balance between supply and demand. The plan is based on establishing requirements for essential military and civilian, and providing affirmative assistance to producers for obtaining materials.

This covers a very broad front—civilian housing, repair and maintenance, Federal, State and municipal public works, public health and welfare. All these requirements must be transcribed into specific tonnages of scarce materials before an accurate system of allocations can be developed.

Obviously, this cannot be done merely through the announcement of a program. The detailed reporting forms from which bills of materials can be derived, the complex machinery of establishing how much materials can be allocated to each industry, and the highly necessary function of explaining the allocations program to industry—all take time.

INDUSTRIAL EXPANSION REQUIREMENTS GREATER THAN MILITARY

Until essential requirements are reduced to specific tonnages, there is no exact method of restricting civilian activities as a mean of making materials available for uses considered more essential

Cutbacks in production of consumer durable goods, reduction in the volume of housing and commercial construction, limitations on the use of copper, aluminum and steel make a substantial tonnage of materials available for military requirements and the expanding civilian programs.

However, the industrial expansion requirements are very heavy. The steel, copper and aluminum requirements for the freight car building program, petroleum output expansion, the plant expansion program, the large program of exploration for new metal and mineral sources—cumulatively by call for a larger tonnage of materials than the direct military needs.

This call on materials is such that controls over the economy stem to a greater degree from these requirements than direct military.

EXTENT OF CONTROLS TIED TO EXPANSION OF PRODUCTION

Overall thesis on mobilization planning is that any attempt at a major rearmament program without expansion of industrial capacity would lead to a general weakening of the economy.

The policy of expanding productive resources and facilities is aimed at reaching

pipng repairs

cost more

now!

**You make them less often
by using Dependable Quality
CRANE VALVES**

*... That's why
more Crane Valves
are used
than any other make*

easy access prevents trouble with this valve

Remove just two nuts to dismantle this gate valve for inspection, cleaning, or repairs—without taking it from the line. Reassemble just as easily, knowing that Crane clamp design keeps the bonnet joint snug and accurately aligned. Use Crane Clamp Gates on steam, water, and air, but especially in heavy fluid lines needing periodic cleanout. They'll save time, labor, and encourage regular servicing that prevents valve trouble.

Combining easy access with highly dependable service features, Crane Clamp Gates typify Crane Quality—better valve performance at lowest ultimate cost.

No. 488 Iron Body Clamp Gate

CRANE

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

CRANE CO., General Offices:

836 S. Michigan Ave., Chicago 5, Ill.

Branches and Wholesalers Serving All Industrial Areas

Please mention **PURCHASING** Magazine when writing to advertisers.

PURCHASING

▲PURCHASING PREVIEWS

continued

a level of productive capacity sufficient to support great military power, at the same time sustaining a very high level of civilian production.

This latter stage could be reached in 18 months or two years. Once the desired expansion is accomplished, there could be some relaxation of controls—although certainly no return to an entirely free economy.

While these are the objectives, overall outlook is for a continuation of controls for many years. Commercial construction has been put under a licensing system, and the Controlled Materials Plan will put much of the nation's industrial processing under a form of Federal licensing.

Furthermore, the great expansion of plant facility stimulated through Government aid to financing and accelerated tax amortization privileges will place industry increasingly under Government surveillance.

MACHINE TOOLS TO BECOME A SHORTAGE PROBLEM

Machine tool availability is again becoming a major problem for the purchasing agent. Traditionally a feast or famine industry, machine tool building has come from a low point several years ago, to a large backlog of orders.

Latest Government action has been to reestablish the same type of pool orders placed with the machine tool builders during World War II. Through the General Services Administration, the Government has placed large orders for a wide range of machine tools, which will be held for delivery to the armed services and to Government agencies such as the Atomic Energy Commission.

Seventy percent will be held for direct military, and 30% will go for other Government requirements, including defense supporting needs for machine tools which have been certified by one of the Government claimant agencies.

If the machine tools are not wholly taken by direct defense or so-called essential requirements, the remainder can be purchased by buyers without priority.

While some uncommitted tools may become available without priority during the next several months, National Production Authority officials indicate that tools will become as short as they were during the last war—despite the availability of a large pool of World War II machine tools and the considerable production of tools during the last five years.

Expected shortage is based on the requirements for new tools resulting from the mass production of jet aircraft and large tanks.

ECONOMIC STABILIZATION STILL UNRESOLVED ISSUE

Price stabilization remains as the major complicating factor in mobilization.

Materials controls have been severe, and there has been little compromise with the hardships resulting from conversion to war production. Although NPA has made adjustments where one company may have suffered undue hardship out of proportion to the impact felt by the rest of the industry, there has been little disposition to relax controls over an entire industry merely to temper the effects of cutbacks.

The only type of general relaxation is a "run-put" provision, permitting the continued processing of scarce materials when the inventory on hand of such materials is unusable for other purposes.

In contrast to this inflexibility in administering controls over materials, actions on price and wage stabilization represent a series of concessions—first to one faction, and then to another.

Organized labor spokesmen indicate that there must be a major reorientation of mobilization policy before labor can be counted on to cooperate in administering the controls machinery.

Until a wage policy can be formulated which holds the line on wages, little can be accomplished to stabilize prices.

The immediate effect of price stabilization efforts has been to squeeze out speculative pricing, and to this extent the Office of Price Stabilization has been fairly effective.

However, the inflationary impact of round on round of wage increases—plus the high level of employment leading to more than one wage earner per family, the upgrading of labor skills which further increase take-home pay, and the increasing trend toward overtime work—all point to the need for a firm policy on control of wages.

From the labor viewpoint, firm wage controls plus manpower controls substantially diminish the role of labor organizations, and union groups are determined to maintain the strength of organized labor—whatever the costs of their dissensions to the mobilization effort.

Meet the BEMIS

Cotton Bag Family

These Bemis Bags and bag-closing materials belong on your packaging team. They are long-time favorites in industry because they are made to give the economical service your business needs.

Besides these and many other cotton bags (not shown), Bemis also makes burlap and waterproof laminated textile bags, multiwall paper shipping sacks, cellophane bags, paper specialties, Tite-Fit Tubing and other packaging materials.



Bemis makes superior quality bags of bleached and unbleached sheeting, woven stripes and other constructions.

The wide range of Bemis sample and mailing bags and other products for industry are listed in "Pocket Guide to Bemis Products." Write for it.

Bemis Special Thread for machine closing of bags, and Mainstay Twine for hand closing of bags, are economical, time-saving —proved by experience.



Bemis dress prints, called Bemilin, are designed by top New York fashion artists. Emptied Bemilin bags are in demand for home sewing.



Sturdy osnaburg makes heavy-duty cotton bags. Especially suitable for multi-trip service.

Get the full details of the Bemis cotton bag story from your Bemis man.

Bemis



There is a Bemis Plant or Sales Office near you—

Baltimore • Boise • Boston • Brooklyn • Buffalo • Charlotte • Chicago • Cleveland
Denver • Detroit • Houston • Indianapolis • Jacksonville, Fla. • Kansas City
Los Angeles • Louisville • Memphis • Minneapolis • New Orleans • New York City
Norfolk • Oklahoma City • Omaha • Phoenix • Pittsburgh • St. Louis • Salt Lake City
Salina • San Francisco • Seattle • Wichita



"HET UP"

about YOUR
wasteful heating

SET UP?

Why not change to

THERMOLIER UNIT HEATERS

If you're dismayed about *last winter's* high-cost-of-heating, how about next year — when it may be as hard to get *fuel*, as it was for you to get *heat* this year?

Here's a red-hot tip. To save heat and fuel, install Thermolier Unit Heaters. But don't delay. Material shortages can seriously disrupt the production of unit heaters. In addition, skilled men are available to make installations now. They may not be in the days ahead. Study these Thermolier Unit Heater advantages — and act promptly.

HEATING COMFORT Thermoliers provide quick heating from a cold start. Desired room temperatures are easily maintained within a close range.

LOW FIRST COST Thermoliers are so efficient and so compact that their heating capacity is often equivalent to the capacity of cast iron radiation or pipe coils of twice the cost.

ECONOMY OF OPERATION Heat is forced down to the working level . . . not banked uselessly at the ceiling level.

ADAPTABILITY TO EQUIPMENT AND FLOOR LAYOUT Thermolier unit heating is widely used in industrial plants and warehouses, garages, stores and public buildings. The units and the simple piping are overhead where they do not interfere with arrangement of the operating machinery or equipment.

THERMOLIER CONSTRUCTION FEATURES THAT SAVE MONEY

Use of plain thermostatic trap, the simplest and least expensive kind of trap, is practical because of Thermolier's exclusive internal cooling leg.

Maximum capacity provided at all times and annoying, destructive water hammer eliminated by built-in pitch of tubes and internal cooling leg which assures continuous drainage of condensate.

Damaging strains caused by expansion and contraction eliminated by "U" type expansion tubes.

Safety and durability assured with leak-proof tube-to-header construction.

Eight other important features. Write for Thermolier Catalog.



Horizontal
Delivery



Textile
Model



Velocity
Nozzle



Vertical
Delivery

GRINNELL

WHENEVER PIPING IS INVOLVED



GRINNELL COMPANY, INC., Providence, R. I. Warehouses: Atlanta • Billings • Buffalo • Charlotte • Chicago
Cleveland • Cranston • Fresno • Kansas City • Houston • Long Beach • Los Angeles • Milwaukee • Minneapolis • New York
Oakland • Philadelphia • Pocatello • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane

SELF-CONTAINED BREATHING APPARATUS

For oxygen-deficient and highly toxic atmospheres. Chemox . . . Demand Type . . . and 1-hour Apparatus.



EYE PROTECTION

Face shields (illustrated) with special visors . . . goggles . . . welding helmets . . . acid hoods . . . heat masks.



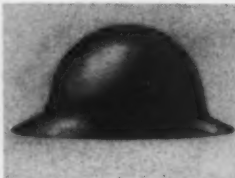
FIRST AID

All-Weather First-Aid Kits and other cabinets . . . Salt Dispensers and Tablets . . . Foile . . . Fend . . . Fire blanket outfits . . . Stretchers.



HEAD PROTECTION

Skullgards . . . McDonald Hats . . . Cool Caps . . . Fireman's Helmets . . . Hat and Goggle or Welding Helmet Combinations.



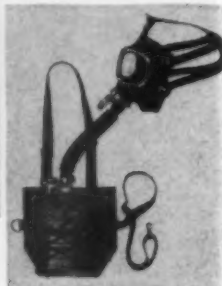
INSTRUMENTS, GAS—PORTABLE

Explosimeters and Combustible Gas Indicators; Carbon Monoxide, Hydrogen Sulphide, Methane, Nitrogen Dioxide and Mercury Vapor Detectors.



GAS MASKS

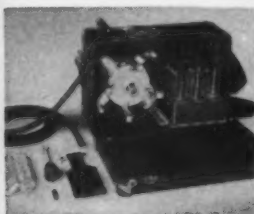
All Service . . . Ammonia . . . Hose Masks . . . Self-Rescuers . . . Military Masks . . . Industrial Canisters.



The
open door
to a
SAFER
TOMORROW...

INSTRUMENTS—DUSTS AND FUMES

Midget Impinger . . . Electrostatic Dust Sampler . . . Microprojector . . . Samplair.



ARTIFICIAL RESPIRATION AND OXYGEN THERAPY EQUIPMENT

Pneolator . . . Inhalator . . . Oxygen Therapy Units . . . Demand Pneophore.



SAFETY CLOTHING

(Wool—Asbestos—Chrome—Plastic—Rubber)

Aprons . . . Gloves . . . Hand Pads . . . Suits . . . Leggings . . . Clogs . . . Knee Pads . . . Shoes . . . Pads.



RESPIRATORS

Comfo . . . Dustfoe . . . Chemical Cartridge . . . Metal Fume . . . Gasfoe . . . Gas-Fume



VENTILATION EQUIPMENT

Air Movers . . . Welding Fume Exhausters . . . Portable Ventilators.



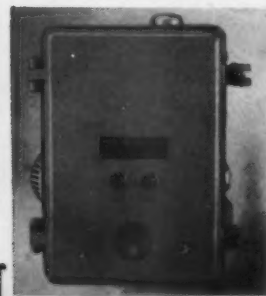
SAFETY BELTS

Leather and Web Safety Belts . . . Lanyards . . . Steel Safety Tail Lines.



INSTRUMENTS—GAS PERMANENTLY INSTALLED

Carbon Monoxide and Combustible Gas Alarms . . . Continuous Carbon Monoxide and Oxygen Recorders . . . Infra-Red Photoelectric Analyzers.



In selecting and buying Safety Equipment, SERVICE is as important as PRODUCT. Call the M.S.A. man on your every safety problem . . . his job is to help you.

MSA
SAFETY EQUIPMENT HEADQUARTERS
MSA

Your business is to make your workers safer. Our business is to furnish the tools for the job. Over 3000 items of proven equipment, developed through the ever continuing Research Program in the M.S.A. Laboratory, are ready and waiting to help you combat the diversified hazards of today—and tomorrow. "M.S.A." means a single source of supply, one undivided responsibility, and a standard of quality that is certified by successful service. Mine Safety Appliances Company, Pittsburgh 8, Pennsylvania.

—Modernize—

YOUR CATALOG AND BULLETIN FILES

Bring Your Source Information Up-to-date on New and Improved Equipment, Products and Materials. This is the first of — FIVE Pages Listing the Latest Trade Literature! Check All Five — 19, 20, 22, 24 and 182! A special listing of catalogs and bulletins on office equipment and supplies will be found on page 182. Additional information about New Products described on pages 130 to 176, use the coupon on page 130.

Slash Your Refractory Costs

1. ALLMULL firebrick is an electric furnace product which has a high melting point of 3335 F. Designed to radically cut refractory costs by eliminating the need for frequent furnace relining, it also features high hot load strengths, high resistance to spalling, and good volume stability. Bulletin describing it states that it gives a new standard of economy and performance in furnace construction and operation. It is being used in hot metal mixers, glass tanks, electric melting furnaces, burner tile, butt weld furnaces and others. It will pay dividends to investigate the lower operating and maintenance costs made possible by Allmull. Check item 1 on the Reader Service Card for the bulletin. Babcock & Wilcox Co., Refractories Divn.

Solves Tube-Working Problems

2. UNDOUBTEDLY you are using tubing in one form or another, therefore you should have copies of these two books for your Catalog file and to help the men in the shop. One is Catalog No. 350 which shows a wide range of tube fittings, and tubeworking tools such as cutters, flaring tools, and benders. The cutters make for faster, easier and better tube cutting; there is a flaring tool that both flares and burinishes; and hand tube benders that form accurate short radius bends without deforming tubing. The No. 2 booklet is a Tube Working Handbook which provides practical "Know-how" on tube cutting, flar-

ing, bending, reaming, etc., that speeds up production. The Imperial Brass Mfg. Co.

Cuts Industrial Truck Maintenance

3. BIG are the savings in material handling costs made possible by today's industrial power trucks. Now a maker has introduced such trucks with a fluid drive which makes for smooth stops and smooth starts, reducing strain and wear on clutch, tires, engine and power transmission parts. Lower maintenance costs and less downtime for trucks are reflected in the manufacturer's statement that "the clutch lasts 3 to 6 times longer." The Yale & Towne Mfg. Co., Materials Handling Divn.

How To Conserve Your Stainless

4. YOU know what the situation is on stainless steel. Accordingly, you

will find it well worth while to sort any mixed stocks you may have. A Data Chart, Sec. A No. 3 describes 10 simple methods for separating stainless from carbon and alloy steels, nickel stainless from moly grades, etc. Each testing method is detailed. The chart is printed on durable cardboard stock. Ask for your copy now. Peter A. Frasse & Co., Inc.

Industrial Cleaners Save Time

5. DESIGNED for industrial cleaning needs, G.E. industrial cleaners have varied time and money saving features. One worker with one G.E. heavy duty cleaner can clean any surface—even pick up small scrap for salvage. Simple attachment enables the cleaning of wet surfaces—picking up mop water, fountain leakage or toilet overflow. Cleaners make maintenance workers more productive. Literature gives complete details. General Electric Co.

READER SERVICE COUPON

APRIL, 1951

MAIL TO:
PURCHASING—Reader Service Dept.
205 East 42 Street
New York 17, New York

Circle the numbers of the trade literature items you want.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16				

Name..... Title.....

Company.....

Street Address.....

City..... Zone..... State.....

Retaining Rings Cut Costs

6. THE maker of a Deublin Union (rotating joint) cut his unit cost \$2.41 by the use of Truarc retaining rings. If you are using machined shoulders, nuts, bolts, snap rings, cotter pins, there's a precision engineered Truarc ring for holding the parts together. New catalog just issued describes the rings in detail. Waldes Kohinoor, Inc.

Backstand Saves Time

7. IF you are grinding, polishing or finishing flat or contoured surfaces, cast pieces, stamped pieces, etc., the backstand belt method can help you increase production and do a better job. Booklet "Facts about Backstand Belt Grinding and Polishing" tells how. Send for copy today. Armour & Co.

Self-Locking Set Screws Cut Costs

8. THE Zip-Grip Self-Locking set screws have solved production problems because they are quickly and easily assembled, and furthermore, have the desired tight fit. Test samples may be had without cost or obligation from the Set Screw Manufacturing Co.

New Idea In Fasteners

9. ROLLPINS make possible real production savings on every type of job involving pinning. These self-locking fasteners are said to eliminate reaming, peening, machining and threading operations. They are quickly inserted into standard drilled holes, and are vibration-proof until removed with a pin punch. They provide a neat, clean, self-locking assembly. They are being used as steel fastening pins holding pulleys and gears to shafts, as pivot or hinge pins, clevis pins, cotter pins, locating dowels and shafts. Full information and samples are available from the Elastic Stop Nut Corporation of America.

Welding Fitting and Flange Data

10. LETTER-size data card saves time and effort by supplying information on welding fittings and flanges at a glance. One side covers the Weldell line of fittings, showing wall thickness for every weight of fitting in every available material,

LATEST TRADE LITERATURE

Check Over All Five Pages!

19, 20, 22, 24 and 182

Check Coupon on Page 19

for every nominal pipe size, $\frac{1}{2}$ " through 30". The other side gives essential dimensional and bolting data for all types of flanges in all weights, for every nominal pipe size $\frac{1}{2}$ " through 24". Sheet gives O.D. and I.D. of any weight of pipe. Taylor Forge & Pipe Works.

Quick, Easy Spring Steel Guide

11. EVERYONE who buys or specifies spring steel will find new Spring Steel Catalog a real time saver. It lists 652 sizes of hardened and tempered spring steel normally available. It also lists 133 cold-rolled and bright annealed sizes usually carried in stock. Yours for the asking. Sandvik Steel, Inc.

100 Different Controllers

12. OVER 100 different models of non-indicating electric, electronic, and pneumatic controllers that have innumerable uses in industrial applications, are covered in 60-page illustrated catalog No. 8304. These industrial controls for temperature, flow, pressure, liquid level and humidity include a number of new additions, such as electronic, electric and pneumatic insertion type temperature controllers; magnetic starters and contactors; heavy duty pneumatic positioning motors; pneumatic automatic reset relays, and both pneumatic and electric step controllers. Minneapolis-Honeywell Regulator Co., Industrial Divn.

Cuts Costs, Reduces Inventory

13. THIRTY-eight standard bushings of maximum usefulness replace more than 1000 different types of transformer and circuit breaker bushings in standardization program described in bulletin titled "Apparatus Bushing Standardization". Prices for standard bushings are 10 percent less than for similarly rated non-standard bushings. In addition to lower prices, users benefit by faster delivery and lower inventory. The standard bushings in-

clude transformer and circuit breaker types rated from 15-kv to 230-kv incl., 1200 amperes and below. Check No. 13 for copy of this bulletin, on Reader Service Card. General Electric Co., Apparatus Department.

Electrical Fittings

14. THERE is always need for electrical fittings, hence Buchanan Electrical Fittings Catalog 1050 should be in your file. It illustrates and describes Pres-Sure connectors, splice caps with insulators which eliminate solder equipment, lugs for single and multiple wire terminations, and Pres-Sure tool; knock-out plugs, insulated metallic conduit bushings which feature high dielectric strength and easy installation, malleable iron conduit bushings, conduit locknuts, box connectors and molded terminal blocks. Buchanan Electrical Products Corp.

Oil Cups, Hole Covers, Gauges

15. NEW condensed Price Guide and Catalog makes it easy to order lubrication accessories such as oil hole covers, oil cups, bottle oilers, multiple oilers, oil gauges, grease cups and shaft seals. Each style group is identified by representative illustration, and tabular listing of style symbol, part number, body, material, thread or drive diameter, etc. The listings include unbreakable plastic bottle oilers—the plastic being a super-tough transparent material—in wick-feed and gravity types. Catalog is accompanied by price list. Gits Bros. Mfg. Co.

Visors For Specific Hazards

16. GREATER user economy through a choice of specific visors for specific hazards, features new line of face shields. One is the "Chempruf" for guarding the face, eyes and neck against chemical splash. The other is the "Chipruf" which protects against light flying particles. "Chipruf" is recommended for use in sanding, light grinding, wood working, hot metal pouring and glass manufacturing, while the "Chempruf" gives protection wherever acids, oils, chemicals, gasoline or hot liquids may splash or spray. Visors are interchangeable on standard M-S-A Headline design

(Please turn to page 22)



The trademarks
everybody
knows

The files
everybody
likes

THAT'S a short way of saying that, through outstanding quality, unsurpassed value, and wide variety, Nicholson and Black Diamond brands constitute the most extensively used files in the world. They're the leading choice among industrial concerns, expert mechanics, tool, die, instrument and model makers, and others whose experience has afforded opportunities for comparisons.

You can't always see the differences in files, but use usually brings them out in unmistakable degree.

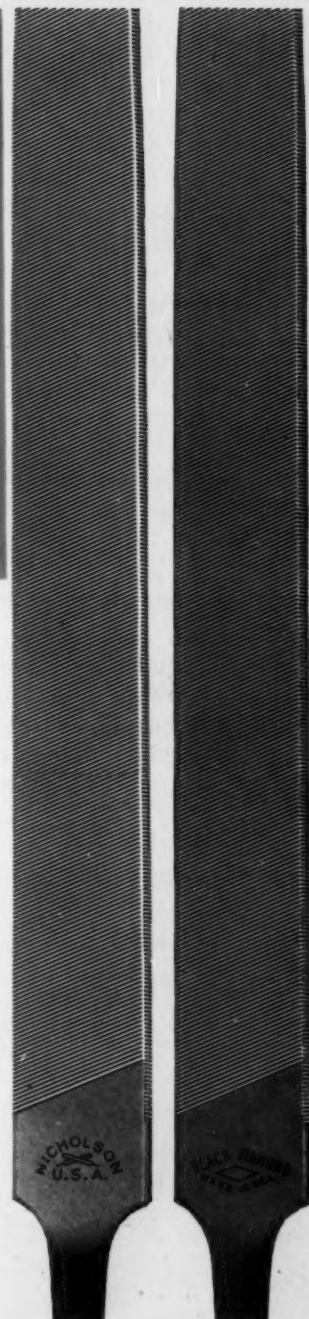
The sweeping Nicholson guarantee of *Twelve perfect files in every dozen* carries the assurance that, within practical requirements, each file is *properly shaped and balanced, accurately cut, evenly hardened*, and made of the *finest steel* obtainable for the purpose.

Sold through leading industrial distributors.

FREE BOOK, "FILE PHILOSOPHY." Especially helpful to production heads, purchasing agents, master mechanics. Write for the number of copies you need for keymen distribution.

NICHOLSON FILE CO. • 28 ACORN STREET • PROVIDENCE 1, R. I.
(In Canada, Port Hope, Ont.)

NICHOLSON FILES
... A FILE FOR EVERY PURPOSE



(Continued from page 20)

headgear. Bulletin CN-4 illustrates the face-shields and describes them in detail. Mine Safety Appliances Co.

Accurate Punches and Dies

17. **INFORMATIVE** circular No. 533 on Punches and Dies and Miscellaneous tools, illustrates, describes, and gives sizes and prices on standard punches, standard punch dies, punch couplings, steel sockets, drifts or center keys, steel sleeves, and steel taper pins, and also illustrates and describes the Renshaw ratchet drill which is made in two sizes—No. 1 taking drills with No. 1 Morse taper shank, and No. 3 taking drills with either No. 1, No. 2 or No. 3 Morse taper shank. Pratt & Whitney.

For Better Shaft Connections

18. **"RC"** Roller Chain flexible couplings featuring simplicity of design, and assured flexibility to accommodate as much as 1/64" parallel misalignment or 1½ degrees angular misalignment without greatly affecting coupling life, are the subject of illustrated folder No. 2363. The folder gives detailed information on service factors, ratings, and dimensions, and tells how to select coupling for a given use. Link-Belt Co.

Self-Cleaning Batch Blenders

19. **SPECIAL** self-cleaning batch blenders or mixers, designed and built for exactness in blending various ingredients regardless of their varying weights, densities, fineness, whether dust or granules, and where

LATEST TRADE LITERATURE

Check Over All Five Pages!

19, 20, 22, 24 and 182

Check Coupon on this page

there must be no loss of dust or finely ground materials, are illustrated and described in new bulletin. Light substances cannot float to remain unmixed with heavier materials. Capacities of eight sizes range from 12 cu. ft. to 550 cu. ft., or, 500 lbs. to 20,000 lbs. Sturtevant Mill Co.

Labor Saving Pullers & Jacks

20. **LIFT**, Pull or Push—These are the jobs of hydraulic pullers and jacks discussed in new bulletin Hydraulic 51. Units are available in capacities ranging from 10 to 100 tons. Featured is the Simplex Remo-Trol line of pumps and rams which lift, pull or push in any direction, easily and in complete safety, from a distance. Light, easy pump action provides tremendous hydraulic force to move heavy loads. Center-hole principle eliminates the torque common to screw-type pullers. Sketches show basic applications. Templeton, Kenly & Co.

Mill Motors & Control Equipment

21. **NEW** booklet, B-4730, describes 600-Series mill motors and Class 9500 dc magnetic mill auxiliary controllers. It describes the high starting torque of the motors, simplified construction (meeting AISE specifications) the complete utilization

of space within the frame, and ease of servicing and maintenance. The controllers use the newly-developed type M contactor, which is available in NEMA ratings from 25 to 2,500 amperes. The different controllers are listed along with a typical circuit diagram—standard accessories are described. Westinghouse Electric Corp.

Cool Cutting Grinding Wheels

22. **COOLER** cutting, faster cutting and longer tool life are claimed for vitrified grinding wheels and segments made by the Koolpore process which creates thousands of induced pores. Available bulletin describing the Koolpore grinding wheels, states that the extra chip-clearance obtained from these extra-open structures allows faster stock removal, and most important of all, cooler cutting-action. There is no chip jamming. Bay State Abrasive Products Co.

Lists 12,500 Different Ball Bearings

23. **UNIQUE** bulletin, No. 26, contains a list of bearing numbers of over 12,500 different ball bearings made by American ball bearing manufacturers. Bearings for each manufacturer are arranged numerically. Opposite each bearing number is the M-R-C ball bearing replacement number. The list of bearing numbers includes current numbers as well as those which are no longer used. Copy of Bulletin No. 26 is available from the Marlin-Rockwell Corporation.

Laminated Plastics Catalog Designed to Help Buyers

24. **DESIGNED** to help buyers, design engineers and production engineers to readily find the best material suited for a specific application, new 62-page "Taylor Laminated Plastics" catalog covers vulcanized fibre, phenol fibre, and special laminates. The special laminates include glass melamine and silicone laminates. The silicone laminate can withstand temperatures as high as 500 deg. F. Fabricated parts, sheets, rod and tubes are illustrated. A Comparator chart aids in grade

(Please turn to page 24)

READER SERVICE COUPON

APRIL, 1951

MAIL TO:
PURCHASING—Reader Service Dept.
205 East 42 Street
New York 17, New York

Circle the numbers of the trade literature items you want.

17 18 19 20 21 22 23 24

Name..... Title.....

Company.....

Street Address.....

City..... Zone..... State.....

HOW



Specialized MOLDING SERVICE

IMPROVES QUALITY, SPEEDS DELIVERY OF PLASTICS PARTS

One of a series of messages to plant managers and purchasing agents to show how General Electric's specialized plastics molding service is geared to highly efficient defense and industrial production.

The General Electric plastics molding service includes one of the country's largest and most expertly staffed mold-making shops. The mold for your plastics part is sure to be made right—and right on time—because it is made under the direct supervision of G-E plastics engineers, by artisans averaging more than thirteen years' tool-making experience.

Depend on G.E.'s complete plastics molding service for the design and mass production of high-quality, cost-saving molded plastics parts. For details, write to Section C-2, Chemical Department, General Electric Company, Pittsfield, Massachusetts.

Molded Plastics for Defense—Defense contractors can depend on General Electric for developing and producing a great variety of molded plastics parts. The broad scope of this service is indicated by G-E compression equipment ranging in capacities from 3 to 36 inches; injection equipment that can handle shots of from 1½ to 208 ounces.

You can put your confidence in

GENERAL  ELECTRIC

(Continued from page 22)

selection according to properties needed, and a selector chart gives complete data on electrical, physical and mechanical properties for all grades. Also, sections are devoted to designing and fabricating data. Taylor Fibre Co.

Big Hoisting Equipment Catalog

25. CHAIN hoists, trolleys, cranes, sheaves, hoist chain, electric hoists, winches and crabs, are illustrated along with descriptions, specifications and prices in new 92-page catalog No. 81. In the wide list of equipment shown you will find Gantry cranes, portable cranes, and a big assortment of hoists and traveling cranes. The catalog also contains full data on repair parts for each of the various types of equipment. David Round & Son.

Induction Heating Uses

26. APPLICATION photos of induction heating for automatic soldering and brazing setups, using high frequency heaters plus either a turntable or a conveyor table are shown in new bulletin entitled "Induction Heating Equipment." Both types of tables are available as standard accessories directly attachable to heaters. These extend heater into a wide range of "ready to run" production tools. Other illustrations show cementing of cleaner hoses to metal ends, and hardening of gear teeth. The catalog makes a free trial offer on the processing of sample parts. Sherman Industrial Electronics Co.

LATEST TRADE LITERATURE

Check Over All Five Pages!

19, 20, 22, 24 and 182

Check Coupon on this page

Trouble Saving Scaffolding

27. THE convenience, economy and other advantages of "Trouble Saver" sectional tubular steel scaffolding for maintenance work in industrial buildings, are described in 12-page bulletin PSS-24. Some 48 photographs and line drawings give detailed information on erection and dismantling of basic units, and a wide variety of actual applications of a special nature. Skilled workmen are not necessary. Rolling scaffolds, and ladder type scaffolds have variety of industrial uses in maintenance and repair work. The Patent Scaffolding Co., Inc.

Solving Steam Trap Problems

28. NEW booklet "Solving Steam Trap Problems" was prepared to aid steam trap users and buyers with their trapping problems. It breaks the subject of trapping down into two separate parts: one is plantwise, and the other the problem of selecting the correct size and type of trap for an individual application. It contains complete information on specifications and capacities of Anderson steam traps, float traps, air release valves and pipe line strainers. Also, it tells how to calculate condensation loads and select traps for all classes of equipment including unit heaters.

And it gives pointers on economical installation and maintenance. V. D. Anderson Co.

Selecting Materials Handling Equipment

29. FACTUAL information for busy executives thinking about materials handling problems, features Standard Specifications Folder which contains complete data on Fork lift trucks, tractors and electric pallet trucks. It gives such information as capacities, load centers, lift heights, weights, dimensions, turning radii, speeds of travel, etc. Covering eight different equipment models, it is easy to read. Towmotor Corporation.

Rubber Compounds and Parts

30. SILICONE rubber compounds whose remarkable qualities feature the ability to withstand extreme high and low temperatures, are dealt with in special section of new 16-page catalog (51SR-1) designed to acquaint buyers and users with Stalwart-developed rubber compounds. This catalog presents full information on compounds with resistance to abrasion, chemicals, high and low temperatures, petroleum products and their derivatives and weathering. Facilities of the company for custom fabrication of molded, extruded, lathe-cut and die-cut rubber parts are described. Illustrations show wide variety of parts which can be furnished to meet J.A.N. or S.A.E. specifications. The Stalwart Rubber Co.

Flexible Metal Bellows Have Varied Uses

31. AVAILABLE in a wide range of sizes, Flexon bellows are manufactured of brass, stainless steel, bronze, monel, and inconel in single and multiple ply construction, and in various lengths depending upon requirements. They are especially suited for applications of control devices and instrumentation, such as regulators, valves, steam traps, shaft seals, expansion connections, and flexible connectors for misalignment. They may be made with variety of fittings and attachments. Flexon bulletin, 16 pages, illustrates numerous bellows types and applications, and stainless steel and brass specifications. Chicago Metal Hose Corp.

(Please turn to page 182)

READER SERVICE COUPON

(APRIL, 1951)

MAIL TO:
PURCHASING—Reader Service Dept.
205 East 42 Street
New York 17, New York

Circle the numbers of the trade literature items you want.

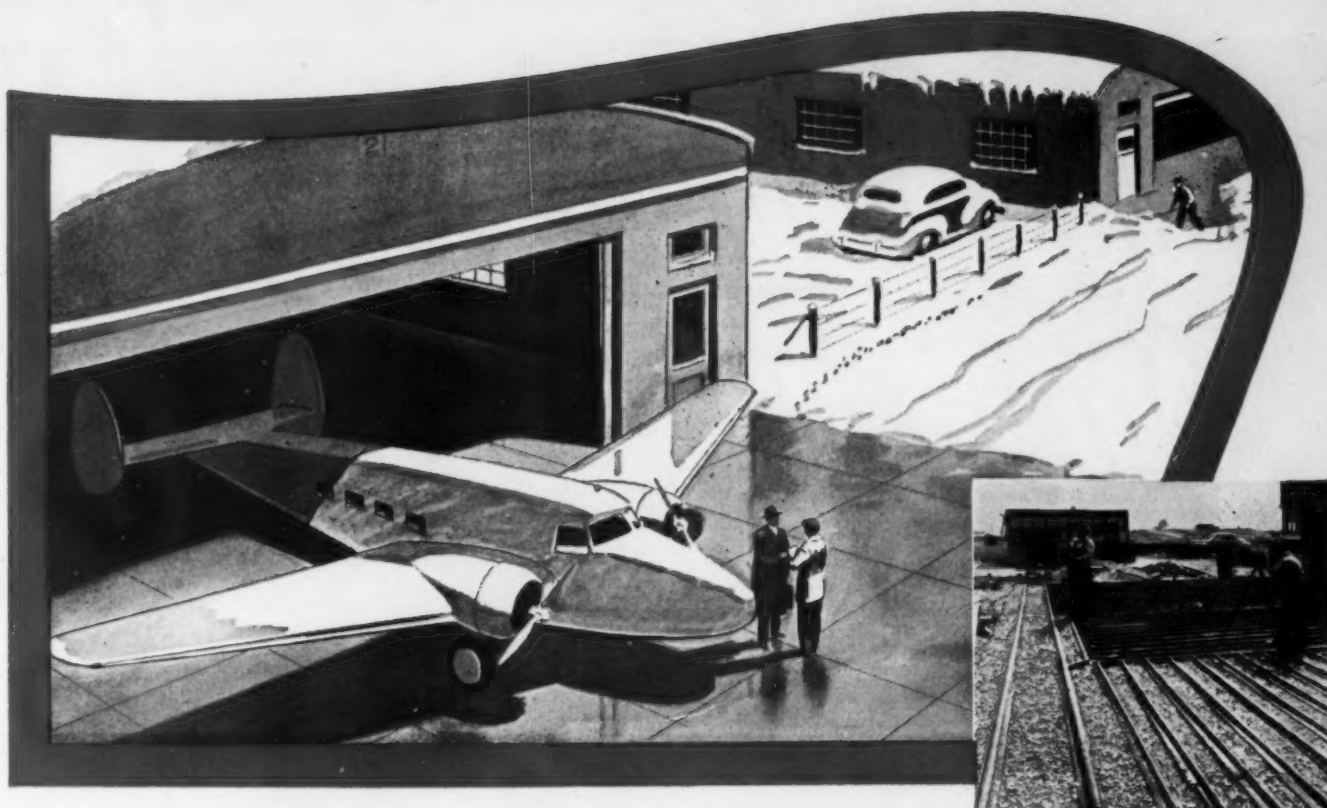
25 26 27 28 29 30 31

Name..... Title.....

Company.....

Street Address.....

City..... Zone..... State.....



**The snow-shoveling system has changed...
but the name on the pipe is an old one...**

SPANG CW

Shoveling snow is slow, inconvenient, and labor-consuming. But the owner of an underground snow-melting system gets rid of snow as fast as it falls, merely by opening a valve.

When you're installing a snow-melting system, specify "Spang CW Steel Pipe" . . . the ideal economical pipe for all closed heating systems. It's equally good under asphalt or concrete, and lasts for years in any location.

Your men will like the way Spang CW Steel Pipe fits up . . . it bends easily and smoothly, is easy to cut and weld. And its uniform high-quality assures good, tight installations.

Specify "Spang CW Steel Pipe", the brand that's backed by our 110 years of pipe-making experience.

There's a supply house near you carrying Spang Pipe and a full line of fittings and equipment for snow-melting and radiant-heating systems. They are making every effort to meet today's great demand for Spang CW Pipe quickly and fairly.

SPANG - CHALFANT

Division of The National Supply Company

GENERAL SALES OFFICE: Grant Bldg., Pittsburgh, Pa.

District Sales Offices: Atlanta; Boston; Detroit; Houston; Los Angeles;
New York; Philadelphia; Pittsburgh; St. Louis



***Take a whale of a bite
out of power costs!***



put cost-cutting teeth in your V-Belt drives with **DAYTON COG-BELTS***

 **40% MORE H.P. PER BELT**  **FEWER BELTS**
 **FEWER PULLEY GROOVES**  **LONGER BELT LIFE**

There's a whale of a saving in power transmission costs when you use the premium Dayton Cog-Belt! It delivers 40% more h.p. than an ordinary V-Belt. Here's why—

Cog-Belts are built to bend—like your finger—to take up compression strains as the belt goes round the pulleys. Results: Less strain, less heat, less stretch, less maintenance, longer life, less down-time.

Save on the cost of original belting! You need fewer belts, fewer pulley grooves to do the job, when 5 Dayton Cog-Belts do the work of 7 ordinary V-Belts,—and do it better!

Save drive-space, plant space! Cogs permit much shorter center-to-center distances—up to 25% shorter. They save up to 47.2% in drive area.

To end your V-Belt troubles for the long “duration” ahead, give your Dayton Distributor the “high-sign” of better V-Belt power transmission: the arched finger that means Dayton Cog-Belts and important savings!

*T.M.

DAYTON RUBBER COMPANY • DAYTON 1, OHIO



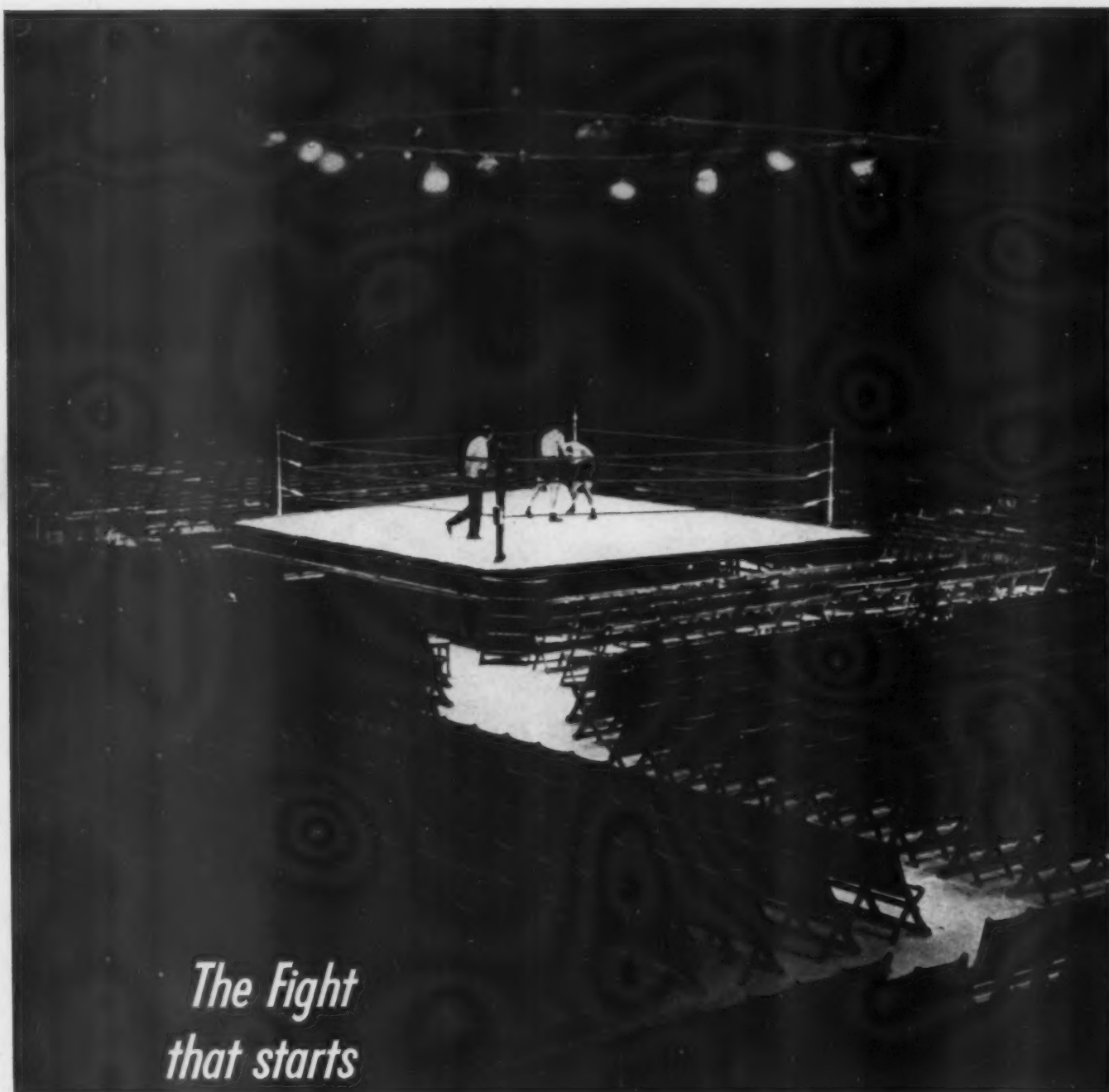
TAKE A TIP FROM A TIPPLE

14 years ago a set of Dayton Cog-Belts went to work, running the tippie at a coal mine at Logan, W. Va. These same veteran Cogs are still on the job! The mine superintendent predicts that they are good for years to come. If you have a drive that's a real toughie, turn it over to a team of Dayton Cog-Belts, for a long, trouble-free life!



Dayton Rubber

WORLD'S LARGEST MANUFACTURER OF V-BELTS



The Fight that starts when the crowd goes home

For one man, the fight just begins when the last punch is landed at Madison Square Garden.

His fight, however, is against time.

He rushes the film of that last Friday bout to the laboratory, and adds it to films made all week at the famous arena. The result: an exciting film program called: "This Week at Madison Square Garden."

And in just a few days, television viewers all over the country are cheering the thrilling events!

With so little time between that last punch and the TV deadlines, his fight against time seems hopeless. Yet he wins it every week—thanks to Air Express!

Air Express speed gives him time to edit and process his films, and get them safely and cheaply to stations everywhere.

And the same speed that meets TV deadlines can help production deadlines, too! Whether your business is films or factories, here are the unique advantages you can enjoy with regular use of Air Express!

IT'S FASTEST—Air Express gives the fastest, most complete door-to-door pick up and delivery service in all cities and principal towns, *at no extra cost.*

IT'S MORE CONVENIENT—One call to Air Express Division of the Railway Express Agency, arranges everything.

IT'S DEPENDABLE—Air Express provides one-carrier responsibility all the way and gets a *receipt upon delivery.*

IT'S PROFITABLE—Air Express expands profit-making opportunities in distribution and merchandising.

For more facts call Air Express Division of Railway Express Agency.





This precision food and beverage mixer gets precision protection in shipment!

Even the finest appliance is useless, unless it is delivered to the customer *in good condition*. And to make sure the Waring Blendor arrives in perfect condition, the makers of this famous food and beverage mixer ship it in this H & D engineered shipping box. Die-cut supports hold the mixer securely in place, guarding it against jolts and bumps in transit.

The H & D Package Laboratory is ready to help with any shipping problem, to provide extra protection, or to give better display . . . increased sales . . . lower shipping and packing costs. For booklet, "Package Engineering," write

Hinde & Dauch, 5104 Decatur St., Sandusky, Ohio

H&D®

HINDE & DAUCH
Authority on Packaging



FACTORIES IN: Baltimore • Buffalo • Chicago • Cleveland
Detroit • Gloucester, N. J. • Hoboken, N. J. • Kansas City, Kan.,
Lenoir, N. C. • Richmond, Va. • Sandusky, Ohio
St. Louis • Watertown, Mass. Offices in principal cities.

Cost Conscious?

RUST-RESISTANT

HIGHLY ADHESIVE

EFFECTIVE TO 1800° F

NEW TO YOU?

Baldwin-Hill's No. 1 Insulating Cement, made of Black Rockwool, is a remarkably economical product... In actual use its dry coverage, one inch thick, is approximately fifty square feet per 100 pounds

SEND FOR QUICK FACTS

Please send me complete information on B-H No. 1 Insulating Cement

NAME _____

POSITION _____

FIRM _____

ADDRESS _____

BALDWIN-HILL COMPANY

404 BREUNIG AVE. TRENTON 2, NEW JERSEY

F.O.B.



FILOSOFY OF BUYING

TO ONE accustomed to the aggressive competition and sweeping claims of American merchandising, there is something very refreshing in the studied understatement of the British advertiser. There's a masterpiece of this technique in the back cover advertisement of a recent issue of *The Purchasing Journal*, official organ of the British Purchasing Officers Association. The heading queries, "How do you choose the best rivet for the job?" (Grammatically correct, the typographer has not resorted to italics or capital initials to make the meaning clearer or more emphatic.) Then comes the selling punch:

"Baxters have been making rivets for over 60 years—long enough to gain quite a lot of knowledge on the subject. Since they manufacture all types of rivets—including many special productions—they will be quite impartial in recommending the best. And, as they're no dearer, what can you lose?"

"Better ask Baxters—perhaps they know!"

Is this copy effective? Part of the answer, at least, is to be found in the opening sentence. Sixty years in business must be accepted as evidence of reasonably successful selling, at least. We are still a little mystified as to how that exclamation point got in at the end.

IF THE government is looking for help in breaking the Russian code, says Lou Gerdes in the *Omaha World-Herald*, it might try putting a purchasing agent on the job. The suggestion is supported by a listing of some rather unusual requisitions received in the City Purchasing Agent's office, which were duly interpreted and satisfactorily filled.

Sedaline—obviously acetylene.

Ankle irons—angle irons, unless the requisition comes from the town hoosegow.

Ray senica—raw sienna, right on the first guess.

Nebraska Grime—not Grade A soot, but a type of seed, "Nebraska Grimm".

20-foot ledger paper—a trifle oversize for most uses, but 20-pound paper filled the bill.

Sharp shooter—a post spade, in case you didn't know.

No reason to get confused just because some one asks for "one new downspout put up". "Standout air holes complete with fitness" was a little more obscure, but phonetically transcribed it came out easily as "standard air hose complete with fittings".

There was a chuckle in the request for "12 spiral stenographer notebooks". And perhaps it was that selfsame dizzy spiral stenographer who requisitioned an "osculating fan" for her office.

GOVERNOR Luther W. Youngdahl of Minnesota makes a periodic "Report to the People" in a newspaper column of that title. In one recent issue, discussing the state budget and the cost of items purchased by the state agencies, it is interesting to note that he supports his argument by reference to an unimpeachable authority—the commodity price index of the National Association of Purchasing Agents.

BUSINESS columnist Elmer Roessner goes into some elaborate mathematics to find the answer to the important and ever-interesting question, "How much is a dollar worth?" By various means of calculation, he comes up with answers ranging all the way from 23 cents to \$4.35.

On the relatively simple basis of purchasing power, compared with prewar consumer prices, he figures that the dollar is worth approximately 56 cents today. But there's a difference in dollars. Suppose, for example, that we are spending a corporation's "profit dollar" for some extra expenditure such as a

pension plan or other employee benefit, or for miscellaneous purposes such as contributions, surveys, or various types of promotion. With a normal tax of 47% on profits, that extra dollar expenditure might represent a net outlay of only 53 cents. Where the 77% excess profits tax applies, it would figure out to a net additional expenditure of 23 cents.

However, looking at it another way, that apparently cheap money may be regarded as a very expensive dollar indeed, for on the excess profits tax basis, the company has to earn \$4.35 for every dollar it is permitted to retain as an added profit (\$4.34747 to be exact). Makes a difference, it seems, whether you are buying or selling, spending or keeping, that elusive buck.

A CERTAIN amount of sales resistance, and the good judgment to apply it in the proper spots, is a necessary part of every purchasing man's equipment. Those who have experienced occasional lapses in respect to this phase of the buying job will sympathize with the plaintive verse quoted in Cart-right Coal Company's *Hot Stuff*:

*I hate to turn a salesman down
And see his bashful blushes;
That's why I find my kitchen full
Of Fuller's household brushes.*

MANAGEMENT is becoming more and more acutely aware that purchasing goes far beyond competent buying—that it is more than the means of implementing material needs, but rather is inseparably bound up with company policies, planning, and controls. This new appreciation of the significance of the purchase function is strikingly illustrated by White Motor Company's recent appointment of Joseph E. Adams to the position of *Director of Purchasing and Planning*. A postscript to the announcement further states that "In his new position, Mr. Adams continues to carry the duties of his former assignment as Director of Material Control, combining them with the purchasing function." Quite a package of responsibility for one office, but where are you going to break it down logically into three separate functions without constant overlapping? Purchasing is more than a tool of management; it may be the key to good management.

APRIL, 1951

Please mention **PURCHASING** Magazine when writing to advertisers.



A STEP
in the Right Direction

A SPECIAL BOLT for a SPECIAL PURPOSE

® Special Ladder Bolt

Won't let you down...whether it's of wood or metal fabrication there's a place for ® Special fasteners. Many wooden products such as ladders, chairs, beds and tables get their strength from the ® line of bolts. Your problems cheerfully become ours when it comes to special bolts and headed rods.

Bolts...by the Carton or Carload

BUFFALO BOLT COMPANY

Division of Buffalo-Eclipse Corporation

NORTH TONAWANDA, NEW YORK

Sales Offices in Principal Cities. Export Sales Office:
Buffalo International Corp., 50 Church Street, New York City

Our Specialty is "SOMETHING SPECIAL"



Vertical and inclined Bucket Elevators with spaced or continuous buckets mounted on chain or belt. A complete line of standards.

A WIDE RANGE OF EQUIPMENT TO HELP YOU DO A BETTER JOB

in
FEEDING
CONVEYING
ELEVATING
REDUCING
DRYING
COOLING
PACKING
SCREENING



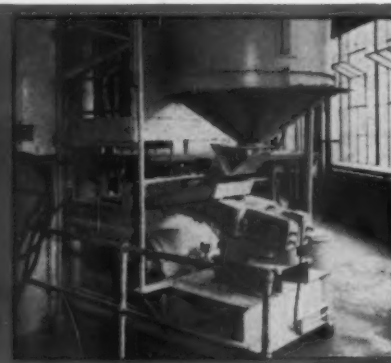
Belt Conveyors for handling a wide variety of loose, bulk material. Roller or ball bearing troughing (or flat) and return idlers for belt widths from 14" to 60". Large capacities and a steady flow.



Spiral Conveyors will handle many kinds of material with clean, dustless operation. No return strand. Standard types—also many special designs and applications. Interchangeable with other makes—built to industrial standards.



A complete line of Crushers, Pulverizers and Shredders for reducing most any kind of material to desired fineness.



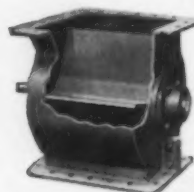
Electric Vibrating Feeders provide absolute control over feeding operations. Open or closed pan, or tubular decks. Capacities from a few ounces up to many tons per hour.



Car Pullers for spotting from one to six cars. Two sizes.



Rotary Bin Check Valves—insure a constant, uninterrupted flow of fine flooding material to vibrating Feeders or WAYTROLS. Also Bin Level Indicators.



Rotary-type Feeder for feeding finely pulverized material. Also Spiral, Apron, Belt, Plate and electric-vibrating type Feeders.



Low Head Barrel Packer for economy in packing operations. Reduces size of containers, increases capacity and cuts shipping costs. Also supplied with deck to provide conveying action during packing operations.

THE JEFFREY

MANUFACTURING COMPANY

ESTABLISHED 1877

734 North Fourth St., Columbus 16, Ohio

Baltimore 2	Boston 16	Camden 2	Detroit 13	Jacksonville 2	Philadelphia 3	Salt Lake City 1
Beijing, W. Va.	Buffalo 2	Cleveland 15	Hartford, Ky.	Milwaukee 2	Pittsburgh 22	Scranton 2
Birmingham 1	Chicago 1	Denver 2	Houston 2	New York 7	St. Louis 1	

Jeffrey Mfg. Co. Ltd., Montreal, Canada

Jeffrey-Quinn (Pty.) Ltd., Johannesburg, S.A.

The Ohio Malleable Iron Co., Columbus, Ohio

British Jeffrey-Diamond Ltd., Wakefield, England

The Galien Iron Works & Mfg. Co., Galien, Ohio

The Kilbourne & Jacobs Mfg. Co., Columbus, Ohio

Complete Line of
Material Handling,
Processing and
Mining Equipment



You pay no premium price for the 7500-hour life and top quality of Westinghouse fluorescent lamps



When it comes to fluorescent lamps, there's no better value for your money than Westinghouse.

In stores they last 2½ years . . .

in one-shift factories and offices, over

3 years. That means big savings on replacements and maintenance. So, next time you need fluorescent lamps, specify Westinghouse!

**YOU CAN BE SURE...IF IT'S
Westinghouse**

MAIL COUPON TODAY FOR FULL DETAILS!

Lamp Division
Westinghouse Electric Corp.
Bloomfield, N. J.

Yes, I'm interested in lighting economy! Send me more information on Westinghouse fluorescent lamps.

NAME.....TITLE.....

COMPANY.....

STREET.....

CITY.....ZONE.....STATE.....

Examples of Savings of Metals, In

DIE CASTINGS

In the present emergency,
Doehler-Jarvis is ready with
100 per cent increase in
capacity since World War II,
with seven plants located
strategically in the
following cities:

TOLEDO, O.

POTTSTOWN, PA.

GRAND RAPIDS, MICH.

BATAVIA, N. Y.





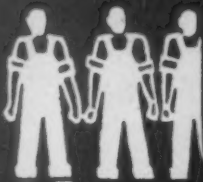







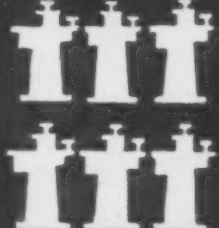

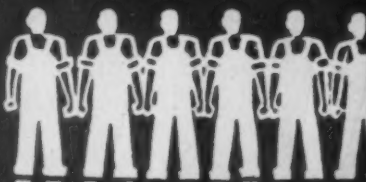


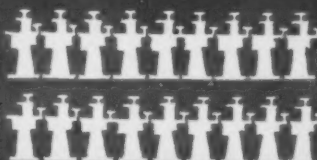

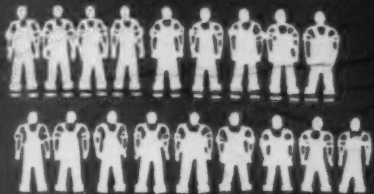
CHICAGO, ILL.

PART	WEIGHT AND METAL IN DIE CASTING	SAVING OF METAL OVER OTHER METHODS
ALUMINUM BOOSTER CUP		
ALUMINUM FUZE HEAD		
ALUMINUM FUZE BODY		
BRASS BOOSTER CASING		

Doehler-Jarvis

s, machines and Manpower by Using

On Armament Production

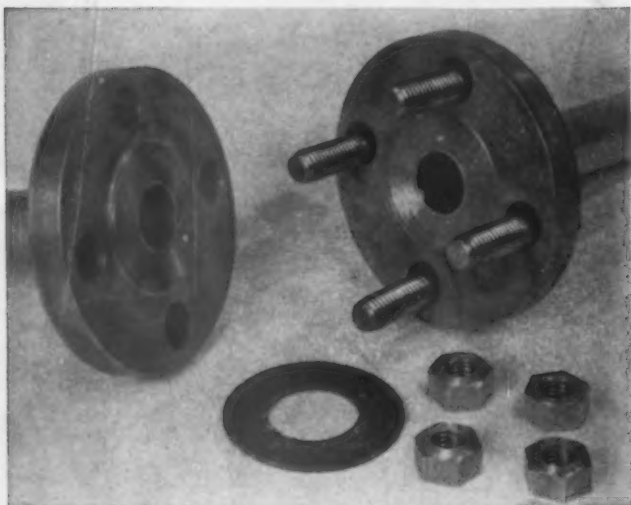
TOTAL MACHINES AND MANPOWER	MACHINERY FOR DIE CASTING	SAVINGS IN MACHINERY OVER OTHER METHODS	MANPOWER IN DIE CASTING PROCESS	MANPOWER SAVING OVER OTHER METHODS
				
				
				
				

The World's Largest Producer and Finisher of Die Castings

rJarvis

CORPORATION
Executive Offices, New York



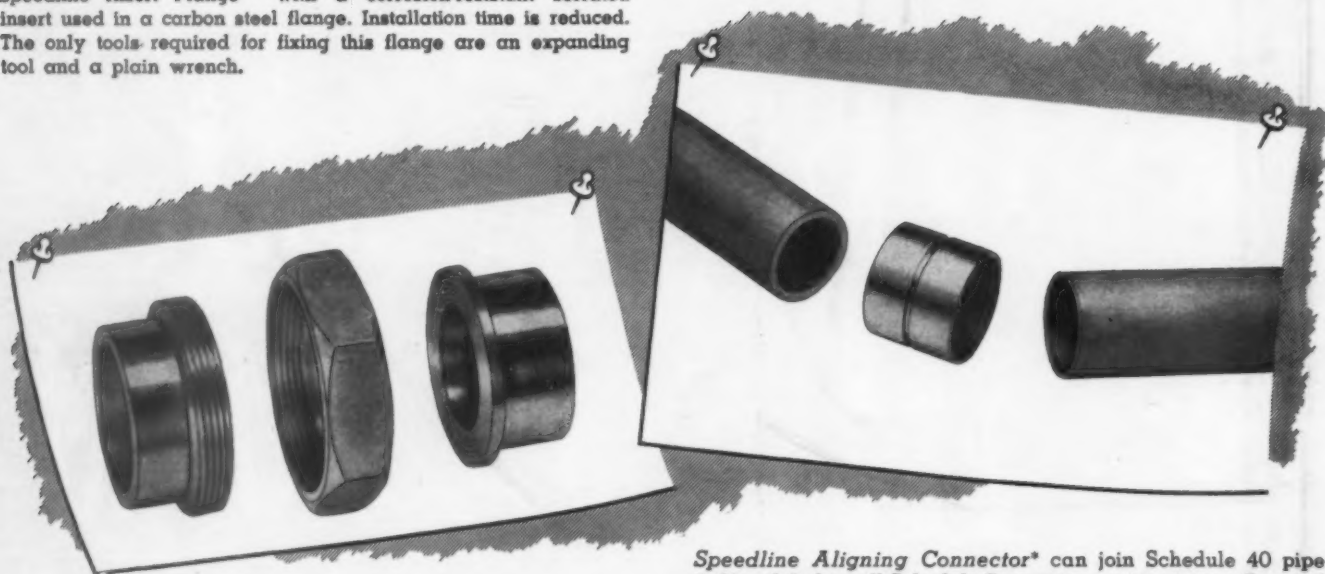
NEW*Speedline* fittings**OFFER SAVINGS on****CORROSION - RESISTANT PIPING JOBS**

*Speedline Insert Flange** with a corrosion-resistant serrated insert used in a carbon steel flange. Installation time is reduced. The only tools required for fixing this flange are an expanding tool and a plain wrench.

The three main advantages you can get with the new *Speedline* fittings are:

- 1.** Improved piping layouts with greater flexibility and increased capacity through the use of light-weight Schedule 5 pipe.
- 2.** Reduced installation costs because of simplified construction that frequently eliminates welding, vanstoning or threading of tubing or pipe.
- 3.** Lower first cost when compared with similar fittings available today.

To discover how *Speedline* corrosion-resistant fittings can simplify installation and help you conserve critical materials, write for a copy of the *Speedline Fittings Book*.



*Speedline Tube Union** combines the best features of screwed pipe unions and sanitary tube unions. It solves leakage problems frequently encountered with corrosion-resistant ground joints.

*Patent applied for

*Speedline Aligning Connector** can join Schedule 40 pipe (left) with light-wall Schedule 5 corrosion-resistant pipe. Or, used in complete installations of Schedule 5 pipe and lightweight O.D. tubing, it provides outstanding economy.

The *Speedline* Fittings described here as well as tees, elbows, etc. are made in A.I.S.I. grades of stainless and Carpenter Stainless No. 20. Other corrosion-resistant materials are used to meet specific conditions of service.

Sizes, Dimensions and Cost Comparison Data are in this 8-page *Speedline Fittings Book*. A table of pipe Schedules 5, 10, 40 and tubing cross-sectional areas gives useful information for planning piping layouts. Write for your copy today.

**HORACE T. POTTS CO.** Since 1815

Erie Avenue and D Street, Philadelphia 34, Pa.
GA 6-4600

Baltimore Branch Warehouse 2835 Sisson St.
HOPKINS 6800

*Speedline***Corrosion-Resistant FITTINGS**

—the newest thing in pipeline economy

IMPROVE TOOLROOM GRINDING

with the world's
most uniform
wheels!

NORTON NEW-PROCESS GRINDING WHEELS

Truly uniform
within each wheel
and from
wheel to wheel

YOUR NORTON DISTRIBUTOR NOW HAS THEM
in sizes and shapes up to 12"
diameter for any toolroom
grinding job.

ASK FOR THEM.

YOU GET ALL 3

1. BUILT-IN BALANCE means less vibration ... closer tolerances ... smoother finishes ... no chatter marks. And this inherent balance stays for the life of each wheel.

2. MORE UNIFORM STRUCTURE means slower and more even wear ... fewer machine adjustments ... sharp reductions in tool spoilage ... assurance that all identically marked wheels will perform identically.

3. FASTER, SMOOTHER, MORE EFFICIENT CUTTING ACTION with the right Norton Alundum* abrasive means deeper cuts in expensive, high-speed steel and cast alloy tools without drawing their temper ... less frequent dressings ... big savings in time and toolroom grinding costs.

RUN A TEST! Compare Norton *New-Process* Wheels with any others. Your nearby Norton distributor or representative will help you select the wheels that will improve your toolroom operations.

NORTON COMPANY, WORCESTER 6, MASS.

Warehouses in 5 cities
Distributors in all principal cities

NORTON
ABRASIVES

*Making better products to make
other products better*

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

APEX

INSERT BITS to drive

First . . .

Apex pioneered and patented the original insert bit and bit holder.

and Foremost . . .

Apex offers the most complete line of insert bits, bit holders and hand drivers for use with insert bits.

U. S. P/T. NO. 2, 622, 217



PHILLIPS



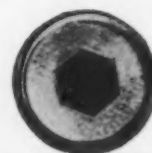
FREARSON



SLOTTED



CLUTCH HEAD



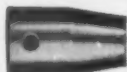
SOCKET HEAD



INSERT BITS—You'll save on tool costs—and help to conserve vital steel supplies—by using Apex bit holders and insert bits. This modern method of production screwdriving is convenient and economical. One bit holder takes a complete line of inserts to drive Phillips, Frearson (Reed & Prince), Slotted, Clutch Head and Socket Head screws. Bit holders, made to fit all popular makes of air, electric or spiral drivers, last indefinitely. Insert bits, quickly and easily interchanged in the holder, are simply discarded when worn.

HAND DRIVERS—The same complete line of Apex insert bits may be used with Apex hand drivers. Available in varied lengths, with wood or superalloy handles.

SERVICE DRIVE BIT HOLDERS—For use with the full line of Apex insert bits. Available with $\frac{1}{4}$ ", $\frac{3}{16}$ ", $\frac{1}{2}$ " and $\frac{3}{4}$ " female square drives.



POWER BITS—For applications requiring the use of conventional power bits, Apex offers a full line of precision-built, one-piece bits. Standard hardness (dark finish) for soft screws . . . X hardness (satin finish) for self-tapping screws.



For complete listing of Apex screwdrivers and bits, write (on company letterhead, please) for Catalog 20.

APEX

screwdrivers and bits

THE APEX MACHINE & TOOL COMPANY

1034 S. Patterson Blvd., Dayton 2, Ohio

SAFETY FRICTION TAPPING CHUCKS • VERTICAL FLOAT TAPPING CHUCKS • SELF-RELEASING AND ADJUSTABLE STUD SETTERS • POWER BITS FOR PHILLIPS, FREARSON, SLOTTED HEAD, CLUTCH HEAD, HEX HEAD AND SOCKET SCREWS • HAND DRIVERS FOR PHILLIPS, FREARSON AND CLUTCH HEAD SCREWS • AIRCRAFT AND INDUSTRIAL UNIVERSAL JOINTS • SOCKETS AND UNIVERSAL JOINT SOCKET WRENCHES.



Goodyear presents **ORTAC**

... the answer to a
universal hose problem

Now hose buying is simpler—thanks to Goodyear's development of **Ortac** (Oil Resistant Tube and Cover) Hose. Until the G.T.M.—Goodyear Technical Man—developed **Ortac**, using the same hose to handle acids, air, water, oil, gasoline and distillates often meant premature and costly failure.

But **Ortac** handles all these materials where the service conditions are not too severe! **Ortac** is highly resistant to petroleum products—mild con-

centrations of commercial acids—the contaminants found in water. Because it has a smooth bore, **Ortac** permits fast flow even when partially reeled. And it is sinewed with high-tensile rayon cords that make it extra-strong and highly flexible.

Consult the G.T.M.—let him tell you whether **Ortac** is your answer to hose problems, or whether you need one of Goodyear's many special-type hoses for specific jobs. Write him c/o Goodyear, Akron 16, Ohio.

GOODYEAR INDUSTRIAL RUBBER PRODUCTS



-Specified ORTAC Hose for UNIVERSAL USE

- A Tough cover withstands weather, oil, sun, abrasion
- B Braid of high-strength rayon cord
- C Tube resists gasoline, oil, weak acids

Facts about **ORTAC**

Size: 3/16" through 1 1/2", with one, two or three braids depending on size. Built with static-dissipating wire, if desired. Available in continuous lengths or in shorter sections—from your Goodyear Distributor. Handles air, water, oil, gasoline and weak solutions of commercial acids.

FOR HOSE, FLAT BELTS, V-BELTS, MOLDED GOODS, PACKING, TANK LINING built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.

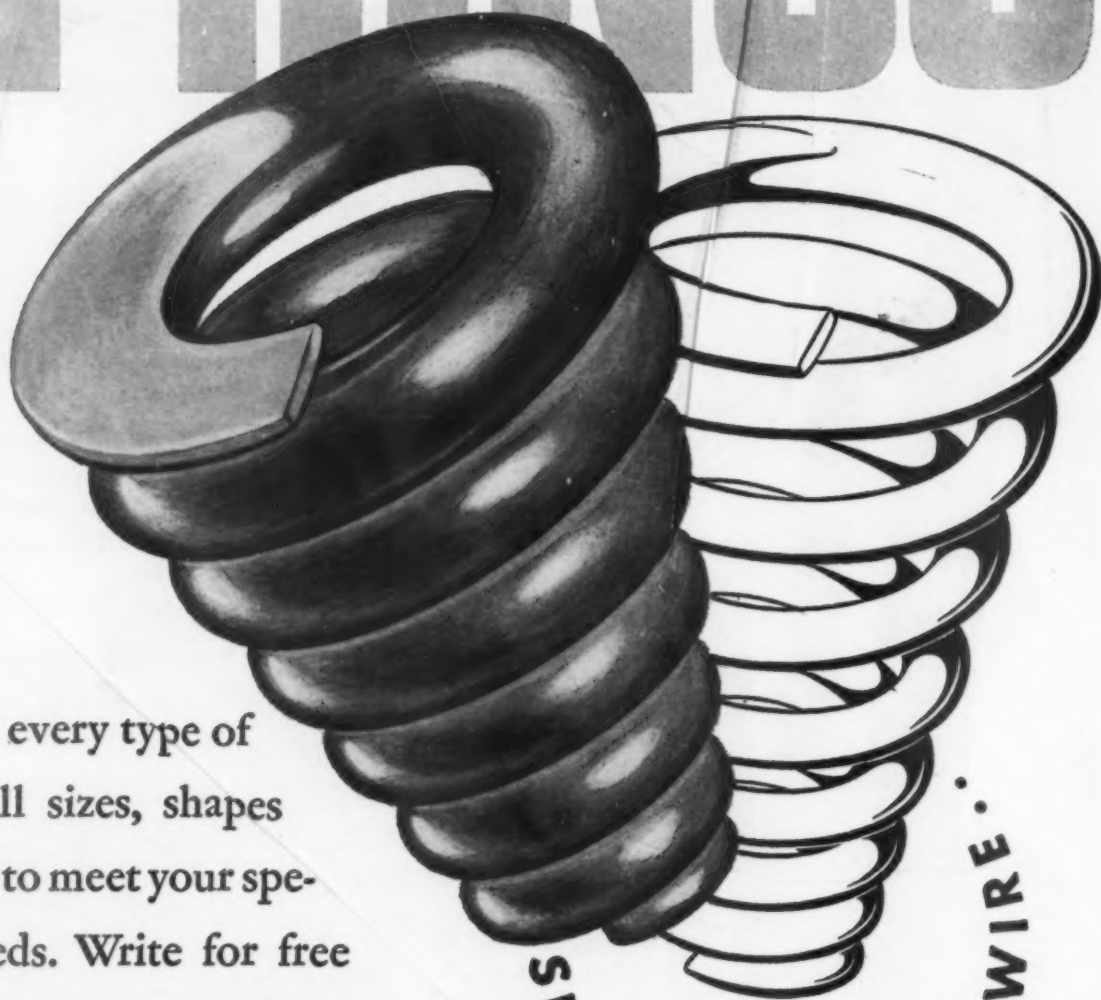
We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

Ortac—T.M. The Goodyear Tire & Rubber Company

GOOD YEAR

THE GREATEST NAME IN RUBBER

SPRINGS



We make every type of spring in all sizes, shapes and designs to meet your specialized needs. Write for free copy of our booklet S-500, entitled "Springs and Formed Wires."

WICKWIRE SPRINGS AND FORMED WIRES

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION • THE COLORADO FUEL AND IRON CORPORATION
SPRING SALES OFFICE & PLANT—2 New Bond Street, Worcester 6, Mass. EXECUTIVE OFFICE—500 Fifth Avenue, New York 18, N. Y.
SALES OFFICES—Atlanta • Boston • Buffalo • Chicago • Denver • Detroit • New York • Philadelphia
PACIFIC COAST—The California Wire Cloth Corp., Oakland 6, Cal.





*Cities Service Terminal & Compounding plant,
Chicago, Illinois*

Newest link of PROGRESS

**NOW!...The newest...finest...
most modern plant for compounding
and packaging lubricating oils**

Month by month you see the proof piling up of still more Cities Service growth... strength . . . progressiveness. Now the latest Cities Service facilities have been added in Chicago's Cicero district. Here a completely modern 25-million-gallon plant is in full operation today, to serve you with lubricants of characteristic Cities Service quality.

The size of this complete plant...its rail and water transport advantages...and the excellence of its output signify the progress Cities Service is attaining throughout its marketing area. Cities Service has been progressive and will remain so, always striving to provide its dealers...its customers...with the finest petroleum products made.



America's blue ribbon companies prefer *Blue Ribbon* tape



Food from Howard Johnson restaurants is famous. The food being packaged by this Howard Johnson worker, is handled and stored under refrigeration—yet the Blue Ribbon tape holds tight.



Blue Ribbon: the tape with the wholesome adhesive



“Blue Ribbon...insures our products against picking up any disagreeable odors”

—says Howard Johnson's

“We have used Blue Ribbon tape since 1949, and are very much impressed with what it has done for us.

“The clean, wholesome odor of Blue Ribbon pleases our employees, and insures our products against picking up any disagreeable odor.

“Previously, we had experienced difficulty in keeping our cartons properly sealed in our refrigerator plants. Now, with Blue Ribbon, we find that our cartons remain permanently sealed even in subfreezing temperatures.

“This is particularly important to food distributors like ourselves.”

Howard Johnson's



Sticks tight instantly for immediate application



Sticks tight quickly, with one firm sweep of hands

GUMMED TAPE...



“The only closure that does so much for so little”



Simple-lead for faster, easier sealing



Long-fiber kraft, heavy glue for more protection



Blue Ribbon **SUPERSTANDARD GUMMED TAPE**

Available plain or printed, in choice of widths, weights, lengths, and colors.

HUDSON PULP & PAPER CORPORATION, Dept. 2-C 505 Park Avenue, New York 22, N.Y.

What makes an industry progressive?

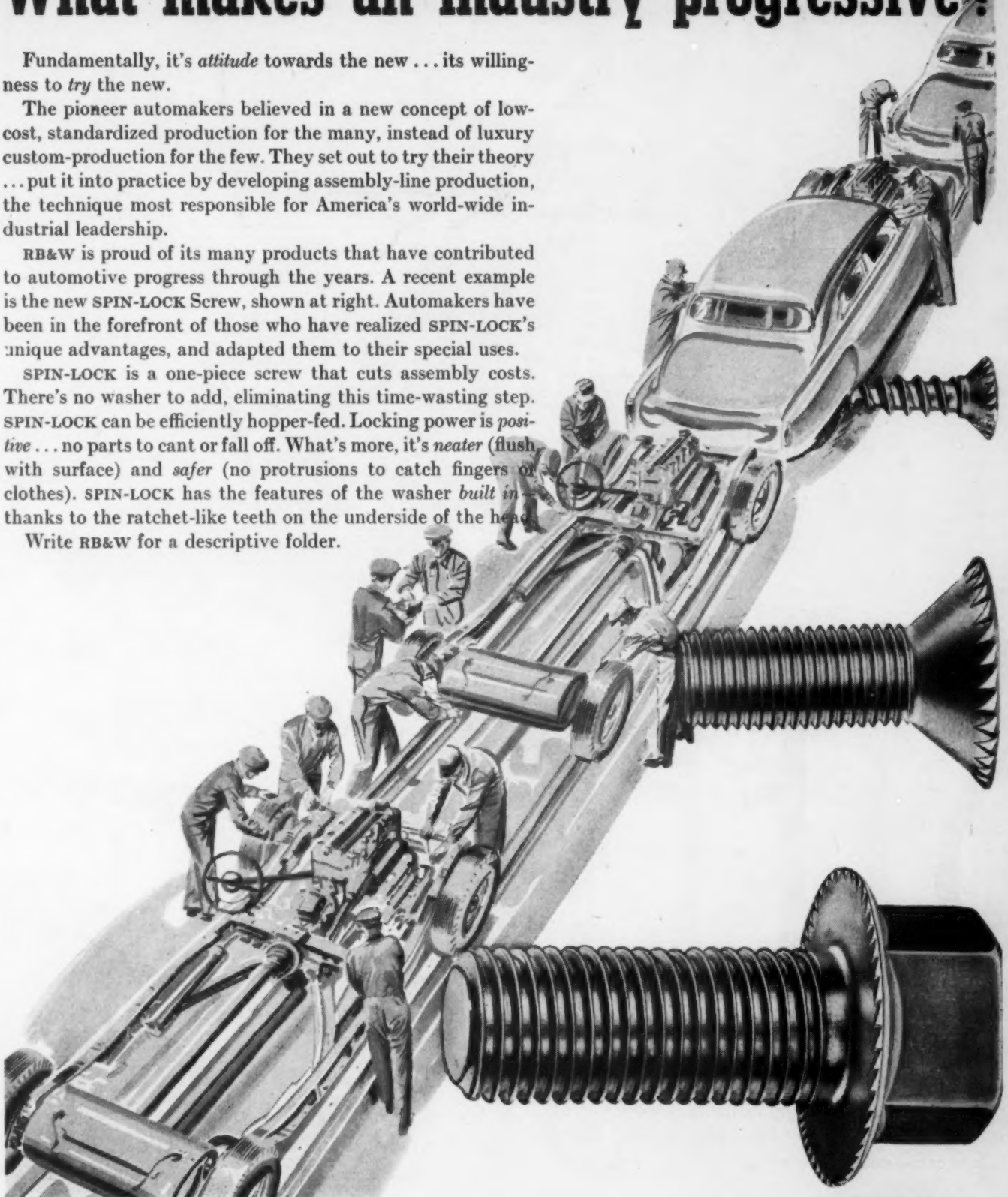
Fundamentally, it's *attitude* towards the new... its willingness to *try* the new.

The pioneer automakers believed in a new concept of low-cost, standardized production for the many, instead of luxury custom-production for the few. They set out to try their theory... put it into practice by developing assembly-line production, the technique most responsible for America's world-wide industrial leadership.

RB&W is proud of its many products that have contributed to automotive progress through the years. A recent example is the new SPIN-LOCK Screw, shown at right. Automakers have been in the forefront of those who have realized SPIN-LOCK's unique advantages, and adapted them to their special uses.

SPIN-LOCK is a one-piece screw that cuts assembly costs. There's no washer to add, eliminating this time-wasting step. SPIN-LOCK can be efficiently hopper-fed. Locking power is *positive*... no parts to cant or fall off. What's more, it's *neater* (flush with surface) and *safer* (no protrusions to catch fingers or clothes). SPIN-LOCK has the features of the washer *built in* thanks to the ratchet-like teeth on the underside of the head.

Write RB&W for a descriptive folder.



RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Dallas, Oakland. Sales agents at: Portland, Seattle.

RB&W

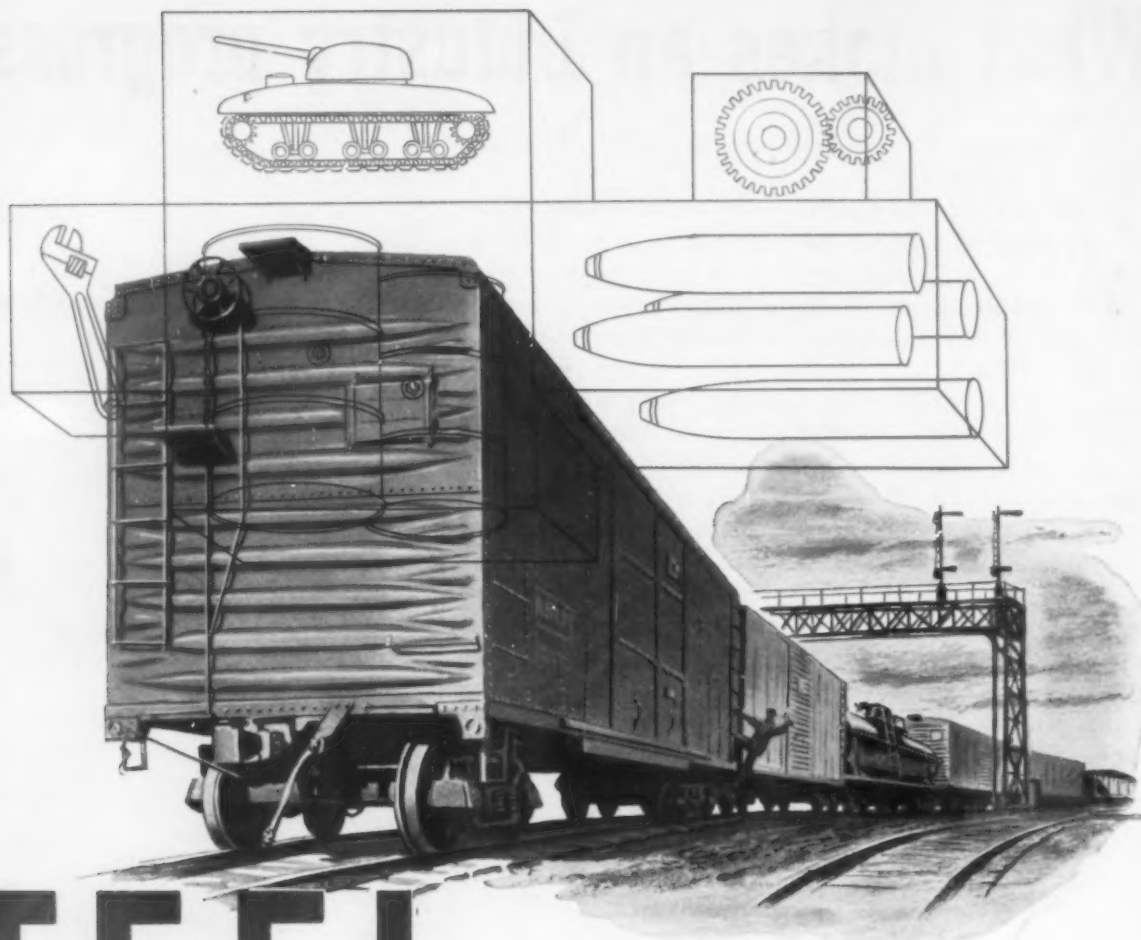
THE COMPLETE
QUALITY LINE

106 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

APRIL, 1951

Please mention *PURCHASING Magazine* when writing to advertisers.

43



STEEL

THE VEHICLE OF DEFENSE

Without steel there would be little or no movement of men and material . . . there would be little or no defense.

Currently, the railroads of America, in order to fulfill their assigned responsibility in the gigantic program of national defense, have ordered \$500,000,000 worth of freight cars—steel freight cars.

The steelmakers of America have responded in like

manner, increasing facilities, stepping up production and allocating a predetermined portion of their total output to car foundries and car builders.

Weirton Steel Company, pledged to participate in defense measures in any way and to any required degree, is supplying a substantial part of its production for the program to increase America's freight car supply.

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

NATIONAL STEEL



CORPORATION



*Look at it
like a management man...*



*...or look at it
like a production man*



...you'll find it pays to make full use of
NATIONAL service on LEAD PRODUCTS

Looking at it either way . . . you benefit by using NATIONAL service on lead in any form: from wire to sheet, from babbitt to piping, from a simple coil to a complex valve.

Take lead valves, for example . . .

With NATIONAL service, you benefit from the engineering know-how of the leader in lead. You get valves and fittings designed to make the most of lead's inherent corrosion resistance. Sold as "United" valves and "United Tubond" flanged pipe and fittings.

With NATIONAL service, you benefit from the widest sort of application know-how. NATIONAL

men work on acid handling problems in many different plants all over the country.

With NATIONAL service, you benefit from the resources of an organization that's NATIONAL in scope as well as in name. NATIONAL's strategically located plants and warehouses, its unexcelled sources of raw materials, its years of experience . . . all add up to the kind of service you expect from the leader.

For acid valves, or any other lead product . . . remember the leader is NATIONAL.

Offices and Plants in Principal Cities;
Pacific Coast: Morris P. Kirk & Son, Inc.,
Los Angeles; Canada: The Canada Metal
Company, Ltd., Toronto.



Reg. U. S.
Pat. Off.

NATIONAL LEAD COMPANY

111 Broadway, New York 6, N. Y.



ARCHIE HELLER

*(Traffic Manager, Mary Jane Shoes,
Division of John Irving Shoe Corp.)*

ASKS 7 QUESTIONS AND CHOOSES...



Archie Heller says: "Choosing the 'cheapest way to ship' requires investigating more than rates alone. Before I chose the means for shipping Mary Jane Shoes, our ladies' high style footwear, to 83 retail outlets, I asked about

1. DEPENDABILITY
2. SPEED
3. PICKUP AND DELIVERY
4. ONE RESPONSIBILITY
5. RECEIPT AT BOTH ENDS
6. LIBERAL VALUATION ALLOWANCE
7. ONE ALL-INCLUSIVE CHARGE

... and Railway Express was the only shipping service that could answer every requirement. For fast, dependable distribution of Mary Jane Shoes to multiple delivery points throughout the country, Railway Express is my 'cheapest way to ship'."

ALWAYS ASK



THE EXPRESS MAN

James V. Moran, 11 years an Express Man



LITTLE THINGS HAVE A WAY OF ADDING UP!

Extra production for defense calls for extra vigilance against machinery breakdowns. Often, these breakdowns are caused by little things—a scored bearing, a clogged oil line, perhaps a worn gear—but these little things really add up! For example . . .

A metal-working plant was replacing 50 special bearings per week—at a cost of \$6.00 each! Machine downtime kept rising—output kept falling.

A Socony-Vacuum Lubrication Engineer was called in, found the trouble (an inferior lubricant plus excessive dust), and recommended changes. Result? Bearing failures dropped to an average of one per week, production shot up, \$15,000 was saved annually!

In your plant, too, Correct Lubrication may be the answer to increased production, lower maintenance costs. *Why not find out?*

Socony-Vacuum, with 85 years of lubrication experience, will develop a program of Correct Lubrication for your plant. Why not get this program started today?



SOCONY-VACUUM

Correct Lubrication

**WORLD'S GREATEST LUBRICATION KNOWLEDGE
AND ENGINEERING SERVICE**

SOCONY-VACUUM OIL COMPANY, INC., and Affiliates: MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORP.

OCS*

Killer of Many Belts before their time



*Overcured Sections —
present every 30' to 40' in
all belts made by the flat press
method. Only Rotocuring eliminates
this major cause of belt failure.

...but you won't find this common cause
of failure in **BWH** ROTOCURED BELTS!

In the flat press method of curing, a segment of the belt is double cured every 30 to 40 feet. These overcured segments of 2" to 4" in width across the entire belt can't be avoided in flat press curing because the previously cured sections are advanced each time less than a full press length. Result: a number of structurally weak, failure-inviting segments (the exact number depending on the length of the belt).

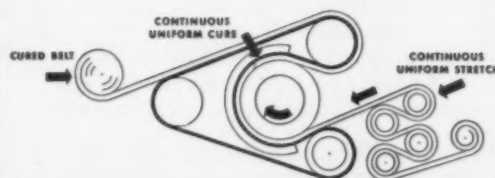
With BWH ROTOURED belts there are no overcured segments because the vulcanization is *continuous*. You as a belt user benefit 4 ways:

- 1 You get uniform, abrasion-resistant covers *overall*.
- 2 You get improvement of flex life up to 40%.
- 3 You get no mechanical distortion (inherent with flat press curing at the press ends).

- 4 You get constant uniform stretch *always*.

These product advantages are why BWH ROTOURED conveyor belts last longer, require less maintenance and lower the cost per ton of material conveyed. You get them too in BWH transmission belts, plus a higher coefficient of friction (no dusting agents required with Rotocure—hence tensions are minimized and belts last longer). Call in your BWH distributor or write us direct for complete details.

DIAGRAMATIC SKETCH OF EXCLUSIVE ROTOCURE PROCESS

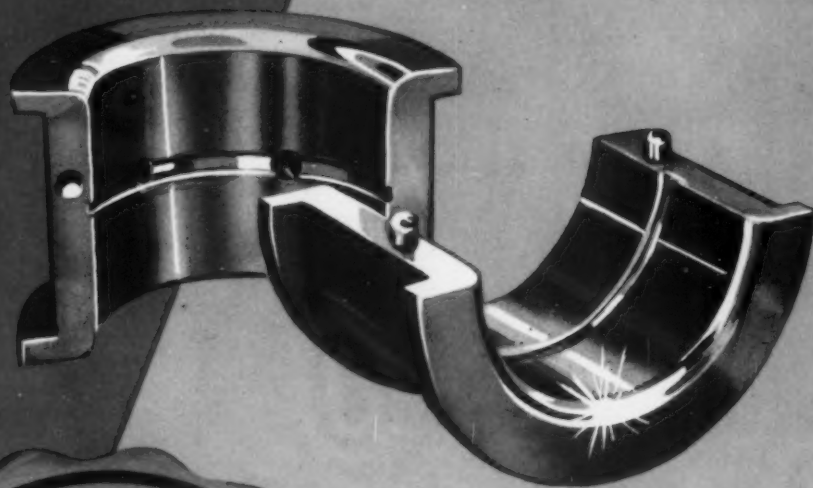


Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS. • P.O. BOX 1071, BOSTON 3, MASS., U.S.A.



50 Years OF PROGRESS IN
SLEEVE BEARINGS

Johnson Bronze

NEW CASTLE, PENNSYLVANIA

A lot has happened in Sleeve Bearings in . . .

HOUSEHOLD APPLIANCES

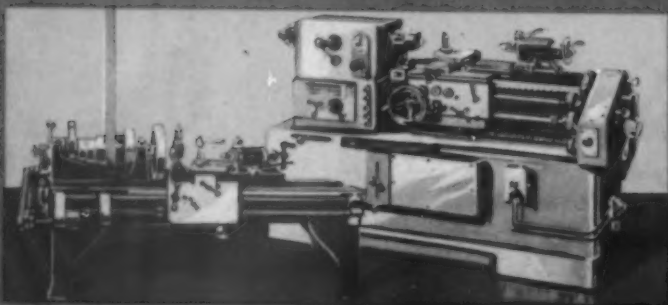


*Q*UIET OPERATION is a big reason why so many household tasks may be accomplished in the house by modern appliances. Quietness has been achieved through the application of sleeve bearings—the "quiet bearings." Working shoulder to shoulder with appliance manufacturers for years, Johnson Bronze has developed bearings of great precision to prevent noise and to give long, efficient operation.



MACHINE TOOLS

*F*IFTY YEARS OF PROGRESS in Johnson Sleeve Bearings has enabled machine tool builders to attain today's accomplishments. Finer and more accurate Johnson Bearings have permitted constantly increasing load, higher speed and rate of feed, while maintaining highest degrees of accuracy, no chatter from wear, and continuous operation over long periods of time. Johnson Sleeve Bearings are engineered for these requirements and are widely used throughout the entire motive and operating units.



FARM EQUIPMENT

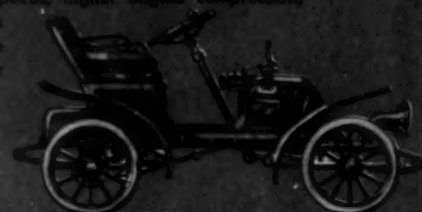
*M*ODERN FARM EQUIPMENT does farm work faster and better year after year, and allows the farmer more leisure than ever. Johnson Bronze has studied for years the requirements of this equipment—strength, stamina, higher speed, greater horsepower, grit and corrosion resistance. Through research and devotion to these problems, Johnson Sleeve Bearings have become the standard in the vast majority of tractors and farm machines. Johnson's latest contribution is the Aluminum Alloy Bearing, the most modern type of sleeve bearing developed for this service.



50
Years

AUTOMOBILES

TODAY'S SLEEK, high-powered automobile shows tremendous progress over the early "gas-buggy." Before many of the developments in automobile operation could be achieved, sleeve bearings had to be designed and produced to permit higher speeds, higher engine compression, and greater endurance. From the early days Johnson Bronze has worked closely with the automotive industry and has been a major source of supply for sleeve bearings.



ALTHOUGH using unlike metals for bearings and shafts still remains the fundamental principle in Johnson Sleeve Bearings, great changes have occurred in them since 1901. New conceptions of bearing materials have marked important steps of progress. Metals have been combined for greater serviceability and for lower cost to the user. Research and engineering have been responsible for many changes in design and application.

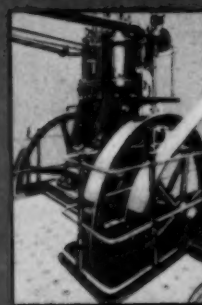
A glance back at the early 1900's will reveal how much the mechanical world has advanced. Today's operating speeds of automotive equipment and other machinery were inconceivable then. Many other bearing requirements have changed, too . . . operating temperatures, loads, shock resistance, continuous operation. Johnson Bronze has accepted each challenge of mechanical progress as it appeared, and each time has developed a sleeve bearing to answer the need. Most of the Johnson Bearings of today show only superficial resemblance to those of fifty years ago.

The first sleeve bearings produced by Johnson Bronze were cast bronze bearings and bronze castings heavily lined with babbitt. Before long, new types were necessary because of the rapid development of the automobile and the need for higher speeds in industry. Johnson Bronze brought out the graphited bearing in 1920, and bronze bearings with thinner babbitt linings in response to the demands of progress. Next came the Johnson Bronze Thin Wall Bearing in 1924—

known as rolled sheet bronze. Babbitt on steel was introduced in 1932 in line with new engineering ideas in the automotive and electric motor industries. The year 1939, saw the introduction of Ledaloyl, the Johnson Bronze Bearings produced by powder metallurgy. These oil-impregnated bearings filled a growing need for light-duty applications where lubrication is difficult or impossible to achieve. Still more recently, in 1942, Bronze-on-Steel became an important addition to the farm implement field, and more recently in other fields. Johnson Aluminum Alloy Bearings are the latest development and are continually finding new applications.

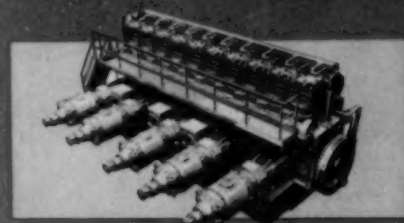
As important as the development of new styles in sleeve bearings, perhaps, are other steps of progress. The improvement and refinement of bronze alloys and their standardization have been triumphs in the bearing industry. Johnson Bronze manufacturing methods have kept pace with the growing demand for greater precision, closer tolerances, and more perfect fit.

On this fiftieth anniversary Johnson Bronze is duly proud of its contributions to the progress in sleeve bearing manufacture.



DIESEL ENGINES

THE MODERN diesel engine has progressed greatly from the original diesel invention. Today it is used for all kinds of stationary and motive power—railroads, trucks, road and farm equipment, marine vessels, ordnance, stationary engines, and uncounted other uses. Johnson Bronze research and engineering have played an important part in becoming the major supplier of sleeve bearings for the diesel industry since its inception.



FREE TO YOU ON REQUEST

A complete set of data sheets covering all phases of Sleeve Bearing properties, design and application will be sent upon request. Use your business letterhead. Also, Catalog No. 510 of standard stock Johnson Bearings and a special anniversary gift will be included.

SLEEVE BEARING HEADQUARTERS Since 1901



Johnson Bronze

735 SOUTH MILL STREET • NEW CASTLE, PA.

A HALF
CENTURY
OF PROGRESS



in facilities,
organization,
and distribution

FROM THIS original plant in 1901, only forty by eighty feet, plus a small foundry just beyond, has grown the present Johnson Bronze Company. Today the plant covers over 400,000 square feet of manufacturing space and is equipped with modern machinery for the production of precision sleeve bearings. Complete research, engineering, manufacturing and inspection facilities assure highest quality in product and service.

During the years of leadership by the late P. J. Flaherty, the organization grew and expanded widely. A new conception of service was installed . . . a nation-wide warehouse system, plus a network of jobber-distributor connections, provides stocks of Johnson Sleeve Bearings in every city and county in America. Industrial buyers and users of bearings throughout the country today can get expert advice from trained representatives and prompt shipments of their bearing requirements. Our modern Export Department maintains excellent connections in every country where American products can be sold. Now, in 1951, Johnson Sleeve Bearings are known and used around the world.

JOHNSON BRONZE CO. 1901



LIST OF PRODUCTS

Aluminum Alloy Bearings
Cast Bronze Bearings
Cast Bronze Graphited
Sheet Bronze Bearings
Sheet Bronze Graphited
Bronze and Babbitt Bearings
Steel and Babbitt Bearings
Steel and Bronze Bearings
Ledaloy Self-Lubricating
Bearings
Electric Motor Bearings
Automotive Bearings
Bronze Bars
Bronze Castings

JOHNSON BRONZE CO

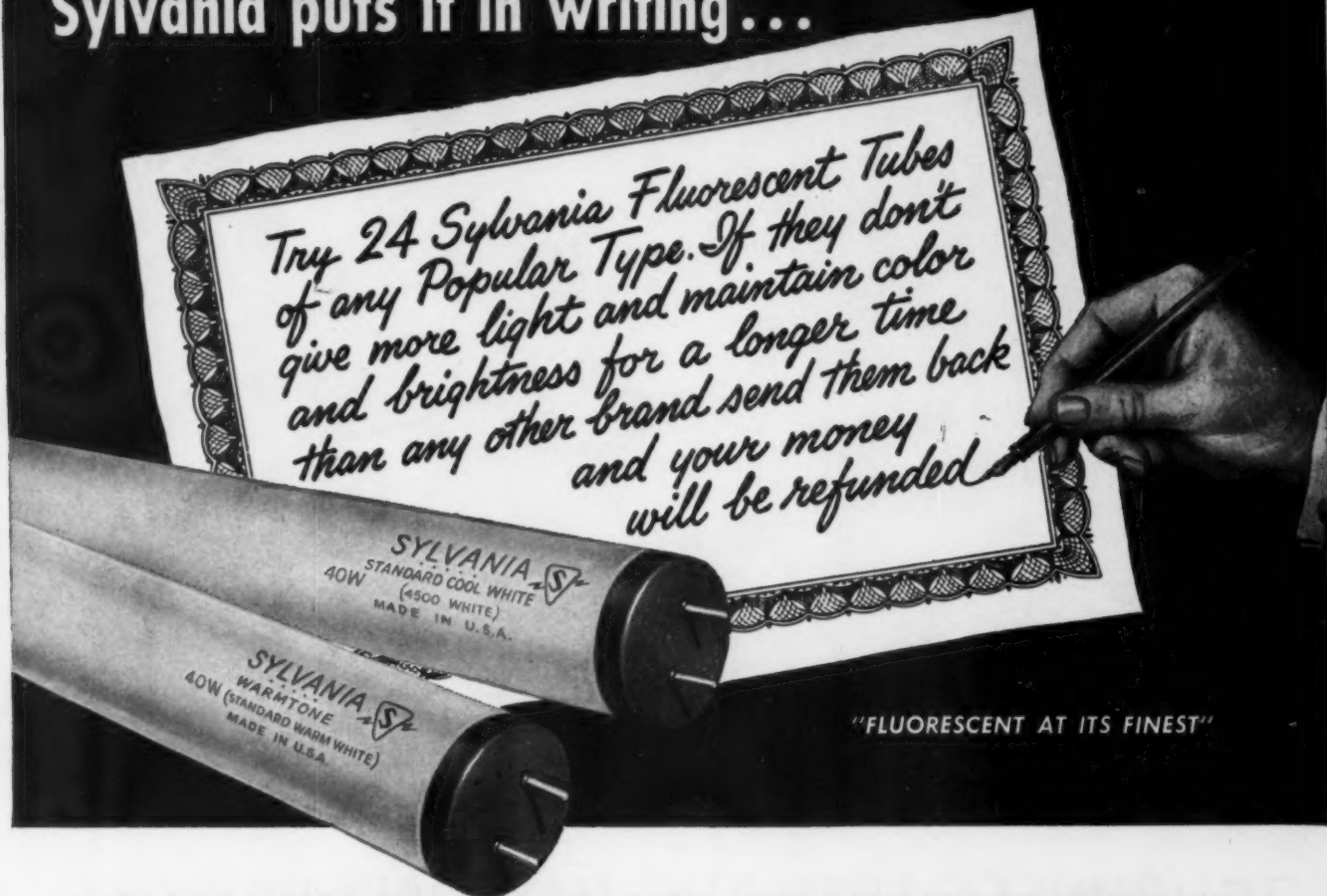
1951

New Castle, Penna.

BRANCH OFFICES: Atlanta • Baltimore • Buffalo • Cambridge • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit
Kansas City • Los Angeles • Minneapolis • New York • Newark • Philadelphia • Pittsburgh • St. Louis • San Francisco • Seattle
Jacksonville • Indianapolis

PRINTED IN U. S. A.

Sylvania puts it in writing...



"FLUORESCENT AT ITS FINEST"

THE STRONGEST FLUORESCENT LIGHTING OFFER EVER MADE!

Mere words aren't enough to convince you of Sylvania Fluorescent Tubes' superiority. You must try them to realize their winning performance.

So now, Sylvania stands behind that trial with the most challenging offer in the fluorescent lighting field.

Just try 24 Sylvania tubes of any Popular Type. When you do, ask for your "Certificate of Assurance." Notice their uniformity

of performance, their brightness, and their matched color appearance. Now, check them month after month...year after year. If they don't last longer, keep their true color tones, and stay brighter than any other tubes you have ever used, send them back with the certificate to your Sylvania supplier and your money will be refunded.

For maximum dependability in any lighting or electrical work, be sure to call the Electrical Contractor who displays this emblem.



SYLVANIA ELECTRIC

FLUORESCENT TUBES, FIXTURES, SIGN TUBING, WIRING DEVICES; LIGHT BULBS; RADIO TUBES; TELEVISION PICTURE TUBES; ELECTRONIC PRODUCTS; ELECTRONIC TEST EQUIPMENT; PHOTOLAMPS; TELEVISION SETS

Sylvania Electric Products Inc.
Dept. L-2404, 1740 Broadway
New York 19, N. Y.
Yes, I am interested in buying and trying 24 Sylvania Fluorescent Tubes.

Name _____
Street _____
City _____
Zone _____ State _____



Another example of Georgia-Pacific's "new dimension" at work

TOUGHNESS LETS THE PAYLOAD PAY OFF!

It takes a strong, tough hide to stand up to the slamming punishment dealt out when these modern freight carriers are loaded and unloaded. Yet Georgia-Pacific's feather-light plywood in trailer body walls shrugs off the shock of thudding crates, and the scrape of loads that would gouge and tear most metals!

That's why Fruehauf, world's largest builder of trailers, specifies Georgia-Pacific plywood for trailer body walls. It brought a "new dimension" to truck-trailer transportation. Because of its rigid strength and light weight, G-P plywood needs no supporting framework, saves precious dead weight. Easy to keep clean, plywood shells give these huge trailers a smooth interior. Non-corrosive, water-resistant, weather-tight, lightweight and strong, plywood costs less per square foot than any comparable material!

Manufactured by G-P to rigid quality standards,

top-quality Douglas Fir plywood of all types and sizes is available to help you find new opportunities for operating economies and product improvements.

BUSINESS EXECUTIVES—For a modern approach to plywood and lumber buying, write on your company letterhead for a copy of this 20-page full-color booklet, "A New Dimension," Georgia-Pacific Plywood & Lumber Company, 610 North Capitol Way, Olympia, Washington.



GEORGIA—PACIFIC
PLYWOOD COMPANY

OFFICES OR WAREHOUSES IN: Augusta, Birmingham, Boston, Chicago, Columbia, Louisville, Memphis, Nashville, Newark, Olympia, Philadelphia, Portland, Raleigh, Richmond, Savannah.

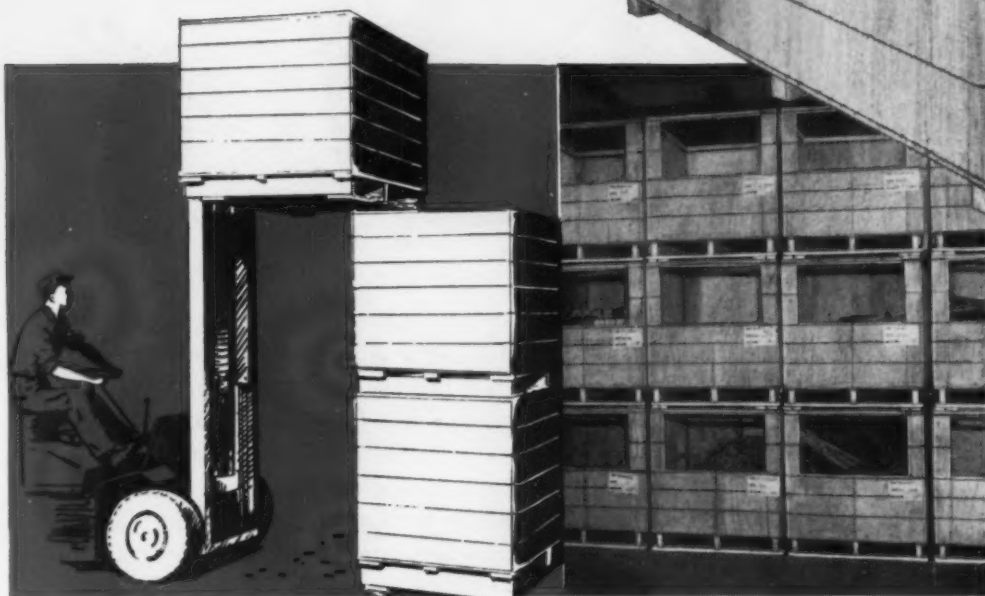
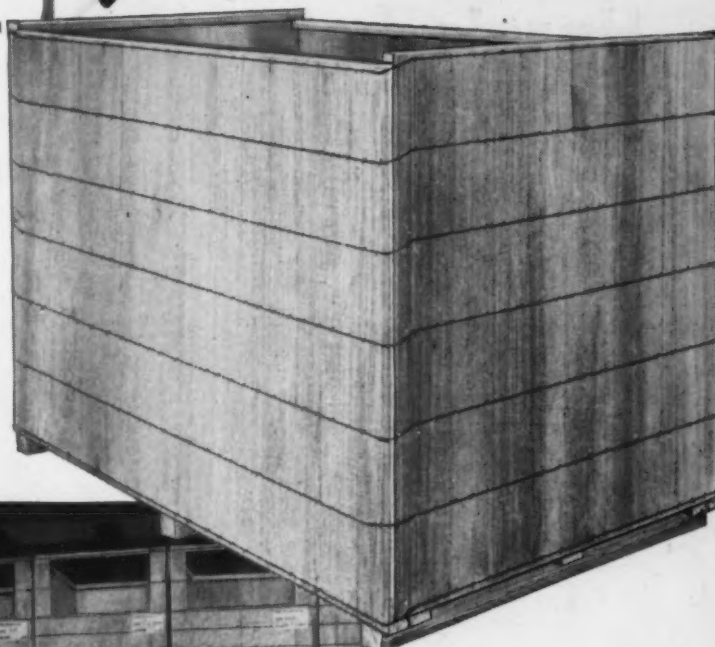


DOUGLAS FIR PLYWOOD • HARDWOOD PLYWOOD • GPX • SOUTHERN & WESTERN LUMBER • DOORS

Generalift *pallet boxes*

provide...

**THE ANSWER TO
MATERIALS HANDLING
PROBLEMS...**



**...AND THE
ANSWER TO
STORAGE
PROBLEMS**

**FOR LARGE BUSINESS
FOR SMALL BUSINESS
FOR ALL BUSINESS!**

The Generalift Pallet Box is new... it has had a truly amazing acceptance among practically all types of manufacturers! It sharply reduces costs because *one* workman, fork-lift truck, and Generalift Pallet Box, do the work of many! If you are interested in sharply cutting your materials handling and storage costs, write today for complete information on this versatile container.

WE WILL MAIL FREE COPY OF "THE GENERAL BOX"

This colorful booklet illustrates and describes the many advantages of the Generalift Pallet Box. We will be glad to mail upon request.



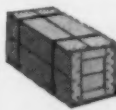
 **ALL TYPES OF
ENGINEERED SHIPPING CONTAINERS**

DISTRICT OFFICES AND PLANTS:
Cincinnati, Denver, N. J., Detroit, East St. Louis, Kansas
City, Louisville, Milwaukee, Sheboygan, Winchendon,
Continental Box Company, Inc.: Houston, Dallas.
General Box Company of Mississippi, Meridian, Mississippi

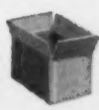
General BOX COMPANY
engineered shipping containers
GENERAL OFFICES:
48 W. Illinois Street, Chicago 10, Ill.



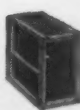
General
Wirebound
Crate



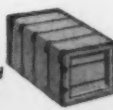
General
Nailed
Box



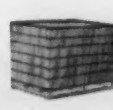
General
Corrugated
Box



General
Cleated
Corrugated
Container



General
All-Bound
Box



Generalift
Pallet and
Pallet
Box



General
Watkins-
Type
Box

Here's help for Housewives..

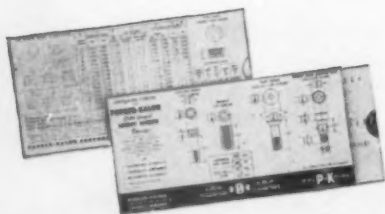


According to worker supply forecasts, your assembly lines will soon be "manned" by more and more housewives.

Whether housewives or not, any "green hands" on Socket Screw assembly jobs will learn faster and work faster with P-K* Size-Marked Gear Grip Socket Head Cap Screws.

The clearly readable Size-Mark prevents confusion and errors—saves a lot of lost motion. It's a help in the tool crib, too, where left-over, mixed screws can be easily sorted. And the Gear Grip means non-slip starting, speeds the job.

No wonder these time-saving, top quality Socket Screws are wanted, in tremendous quantities, for more of industry's finest products than ever before. P-K production is going 'round-the-clock to meet this mounting demand. For D.O. or other assemblies set your standards by P-K quality. Parker-Kalon Corporation, 200 Varick Street, New York 14, N. Y. Sold through Accredited Distributors.



MORE HELP FOR ASSEMBLY PLANNERS

The New P-K Socket Screw Dimension Finder

A pocket-size plastic slide chart gives you all essential dimensions of P-K Socket Cap Screws, Set Screws, Flat Head Screws, Stripper Bolts, and Pipe Plugs. Includes Set Screw Point Dimensions, and Thread Length Formula. Available, FREE from your P-K Distributor.

PARKER-KALON*

cold-forged

SOCKET SCREWS

SIZE-MARKED SOCKET HEAD CAP SCREWS • GROUND THREAD SOCKET SET SCREWS
FLAT HEAD SOCKET CAP SCREWS • STRIPPER BOLTS • PIPE PLUGS • HEX KEYS

* TRADE MARKS REG. U.S. PAT. OFF.

FOR YOUR PRODUCTION NEEDS

LYON offers more than 1500 regularly cataloged items of steel equipment engineered to meet your regular or defense production needs.
See list below.

FOR DEFENSE SUBCONTRACTS

Complete sheet metal facilities to handle gauges 10 to 24. Two strategically located plants, 1500 trained workers, our own toolrooms, 3800 contracts in World War II.

2 STRATEGIC PLANTS . . . AURORA, ILL., AND YORK, PA.

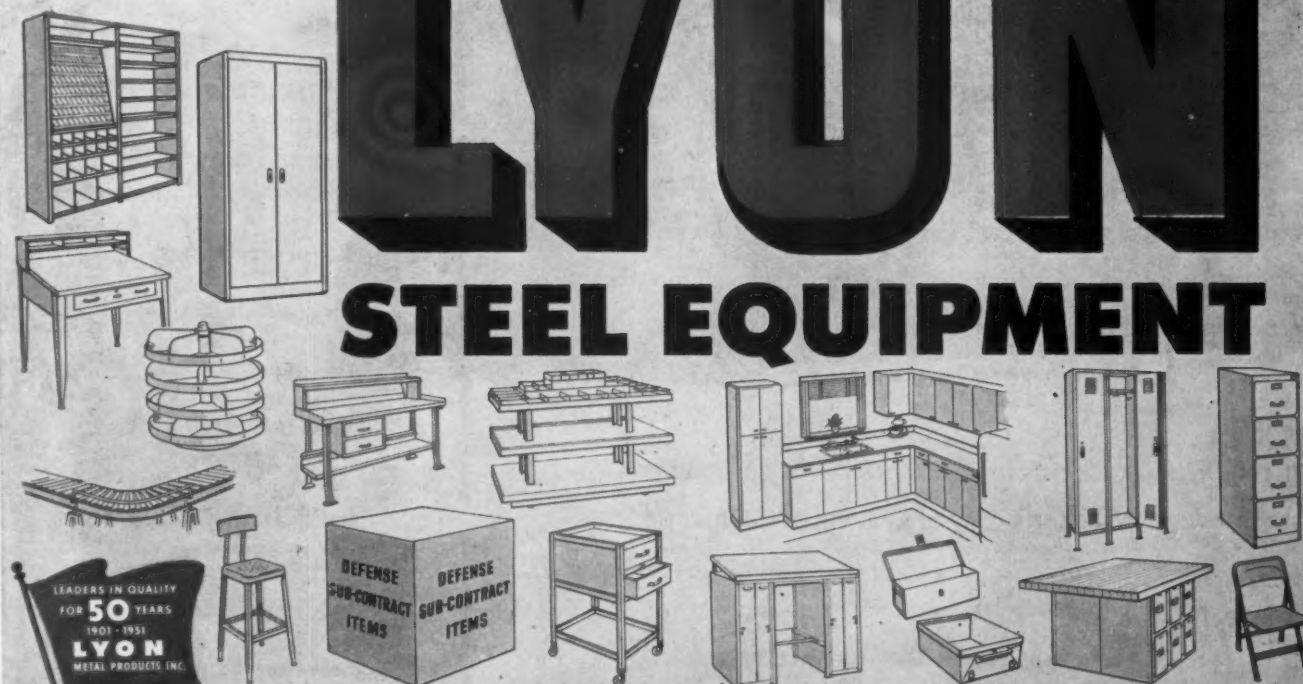
LYON METAL PRODUCTS, INCORPORATED

General Offices: 433 Monroe Avenue, Aurora, Illinois

Sold Nationally through Factory Branches and Dealers

LYON

STEEL EQUIPMENT



A PARTIAL LIST OF LYON PRODUCTS

- | | | | | | | | |
|-------------|--------------------|---------------|------------------------|---------------------|-------------------|-----------------|---------------|
| • Shelving | • Kitchen Cabinets | • Conveyors | • Economy Locker Racks | • Display Equipment | • Filing Cabinets | • Service Carts | • Tool Stands |
| • Lockers | • Cabinet Benches | • Bar Racks | • Flat Drawer Files | • Drawing Tables | • Folding Chairs | • Sorting Files | • Shop Boxes |
| • Stools | • Storage Cabinets | • Tool Boxes | • Toolroom Equipment | • Revolving Bins | • Work Benches | • Drawer Units | • Tool Trays |
| • Bin Units | • Welding Benches | • Parts Cases | • Wood Working Benches | • Hanging Cabinets | • Bench Drawers | • Hopper Bins | • Shop Desks |

FOR LEAKPROOF, TROUBLE-FREE PIPE RUNS



**Specify
Walseal*
Products**

On all types of piping jobs where Type "B" copper or red brass pipe is used, trouble can be avoided by installing Silbraz* joints — made with Walseal valves, fittings and flanges.

Threadless, patented Silbraz joints are silver brazed (not soft soldered) pipe joints that are leakproof, trouble-free — permanent . . . connections that will not creep or pull apart; that literally join with the piping system to form a "one-piece pipe line". Thus, these modern joints eliminate the need for maintenance and costly repairs — especially important where lowered operating costs are imperative.

For complete details on the modern Silbraz joint, made with Walseal products, write for a copy of Walworth Circular 84.

*Patented — Reg. U. S. Patent Office.

Make it a "one-piece pipe line" with WALSEAL

WALWORTH
valves and fittings
88 EAST 42nd STREET, NEW YORK 17, N. Y.

Recommended for

Hot and Cold Water
Circulating Systems

Boiler Feed Lines

Steam Return Lines

Condensate Lines

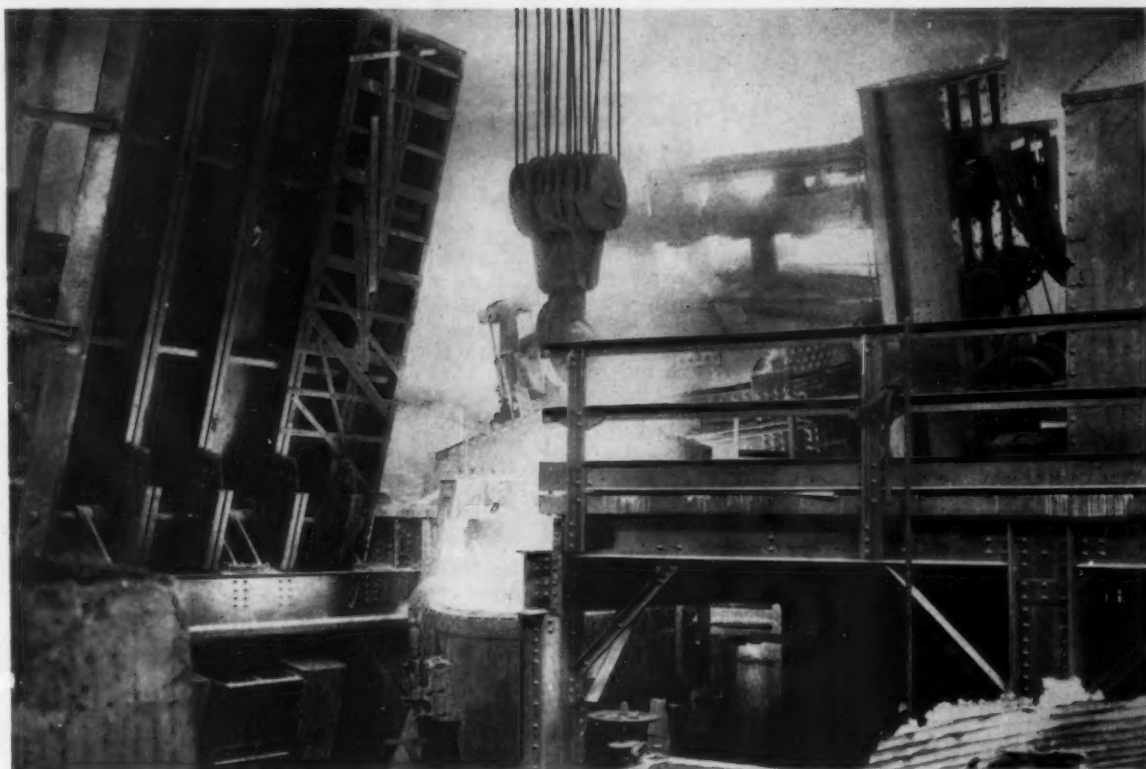
Low and High Pressure
Air Systems

Lubricating Oil Circulating
Systems

Industrial Gas Piping

Solvent and Vacuum
Piping Systems

WIRE ROPE



**Roebling Preformed lasts longer, performs better
... saves wire rope dollars**

YOU PAY FOR THE BEST when you buy wire rope. And you *get the best* when you buy Roebling Preformed "Blue Center" Steel Wire Rope. "Blue Center" steel is an exclusive Roebling product ... gives rope the extra toughness that spells long life ... service economy that really counts. Besides that, Roebling Preformed can be cut without seizing ... always spools better ... reduces vibration and whipping ... doesn't tend to set or kink.

Roebling makes a wide range of wire rope ... brings you the right construction, grade and size for top performance and economy on each installation. Have your Roebling Field Man help select the *best* rope for your particular requirements. And for maximum savings, get his suggestions on the proper use and maintenance of wire rope. He knows the case histories of thousands of installations. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

Atlanta, 934 Avon Ave ★ Boston, 51 Sleeper St ★ Chicago, 5525 W. Roosevelt Rd ★ Cincinnati, 3253 Fredonia Ave ★ Cleveland, 701 St. Clair Ave, N.E. ★ Denver, 4801 Jackson St ★ Houston, 6216 Navigation Blvd ★ Los Angeles, 216 S. Alameda St ★ New York, 19 Rector St ★ Odessa, Texas, 1920 E. 2nd St ★ Philadelphia, 230 Vine St ★ San Francisco, 1740 17th St ★ Seattle, 900 1st Ave, S. ★ Tulsa, 321 N. Cheyenne St



STAMPINGS

WE ARE READY TO ACT AS SUB-CONTRACTORS
TO FURNISH YOU WITH HIGH QUALITY . . .
PRECISION PARTS . . . QUICK DELIVERIES

Speed your output of defense orders. Let Garrett's extensive World War II experience in making Armed Forces parts and material produce your stampings. From a small part, produced on high speed presses, to a large television chassis Garrett has the plants . . . equipment . . . and "know-how" to turn out stampings by the thousands or millions.

COMPLETE EQUIPMENT FOR HIGH SPEED PRODUCTION
Our plants are equipped with the most modern automatic high-speed presses from 17 to 150 ton capacity. Stampings can be manufactured to your precise specifications from steel, stainless steel, aluminum, Alclad, brass and numerous other metals.

Up-to-date tool shop . . . plus complete finishing equipment—including tumbling, polishing, sand blasting, heat treating and plating equipment—assure you of quick deliveries and high quality.

FAST DELIVERIES . . . ONE SOURCE . . . ALL PARTS

Stampings, lock washers, flat washers (to Government Specifications), springs or hose clamps . . . Garrett makes them all . . . and gives you quick deliveries. Write for new helpful folders:

No. 006 STAMPINGS to Armed Forces Specifications
No. 005 "WASHERS" to Armed Forces Specifications

GEORGE K. GARRETT COMPANY, INC.
D & TIOGA STREETS, PHILADELPHIA 34, PA.

Manufacturers of
STAMPINGS . . . LOCK WASHERS . . . FLAT WASHERS
SPRINGS . . . HOSE CLAMPS



BRANCH PLANT

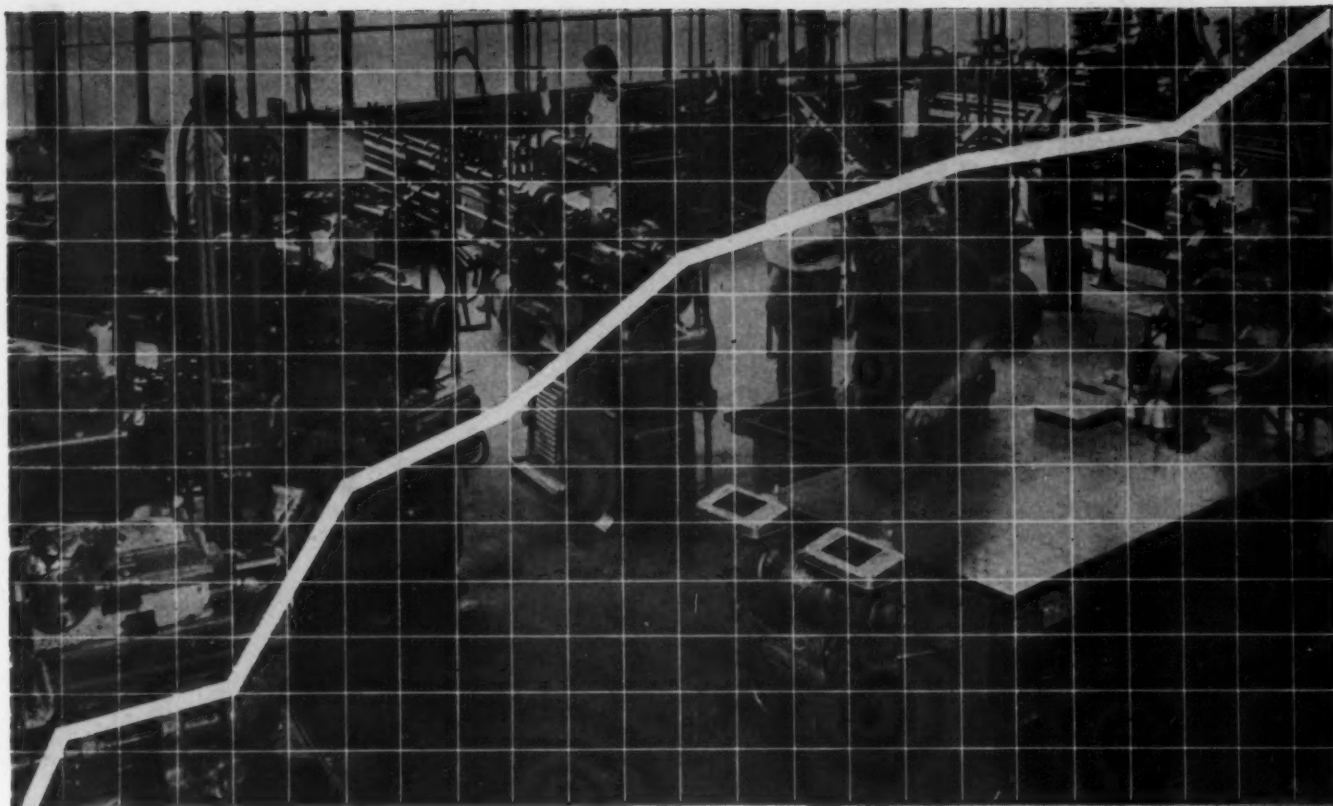
ELLMWOOD CITY PLANT (PITTSBURGH AREA)

MAIN OFFICE AND PLANT
PHILADELPHIA



Garrett
OF PENNSYLVANIA

MANUFACTURERS OF
STAMPINGS, LOCK WASHERS, FLAT WASHERS, SPRINGS, HOSE CLAMPS



IN ADDITION to being one of industry's largest suppliers of Vulcanized Fibre, Phenol Fibre, Special Glass Melamine and Silicone Laminates, Taylor Fibre Co. offers a *complete* fabricating service. In our modern fabricating department, we are equipped to handle any type of machining operation on Taylor Laminated Plastics. Skilled craftsmen, operating drill presses, milling machines, borers, lathes, punch presses, automatic screw machines and other units, can turn out parts to meet your most exacting specifications. Taylor Fabricating Service is streamlined to save time, trouble, and money for you. When parts are machined by Taylor, you relieve yourself of production and labor problems. Mistakes, rejects, machinery breakdowns are *our* headaches. The scrap problem is *ours*. You have only to receive and give final inspection to the finished parts. These are delivered *on time*, ready for your production line.

For a *complete* line of Laminated Plastics . . . for a fabricating service designed to save you time and money, call on Taylor Fibre Co. You'll find it pays!

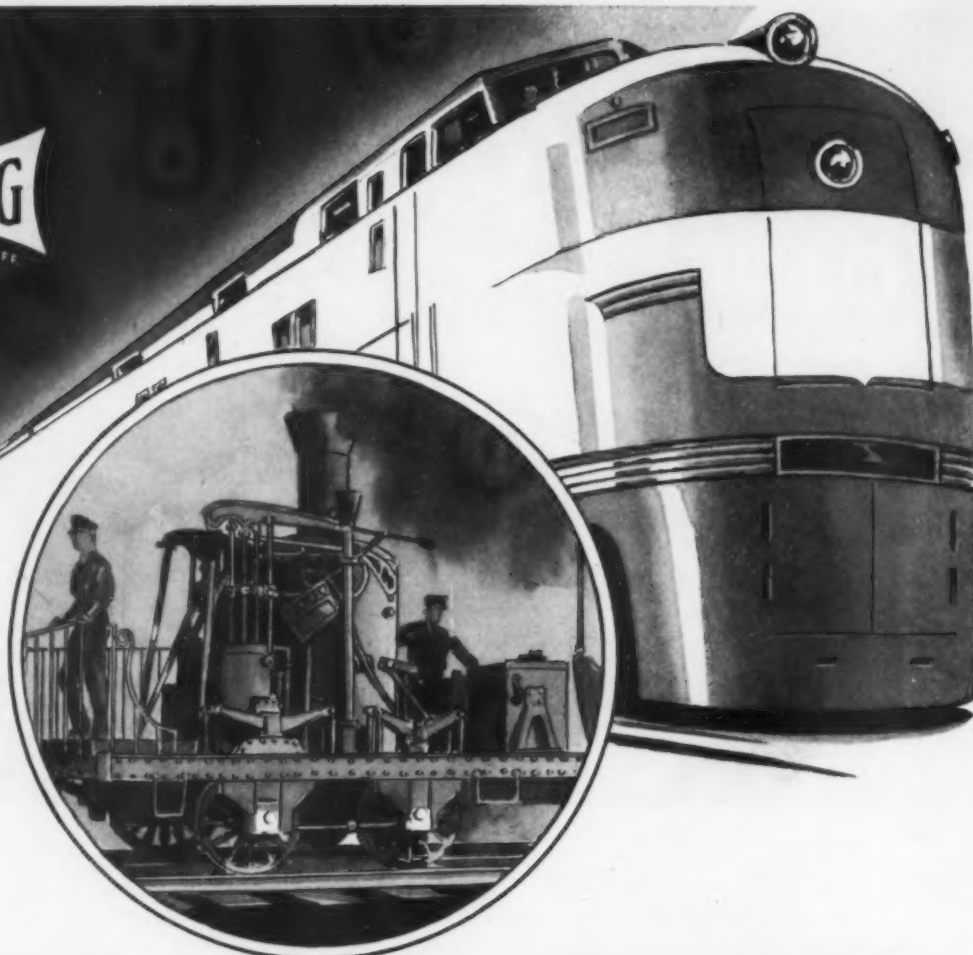


TAYLOR FIBRE CO.
NORRISTOWN, PENNSYLVANIA
WEST COAST FACTORY: LA VERNE, CALIF.

Here's a sure way
to save time...
reduce costs!



This new 1951 Taylor Catalog contains complete specifications and description of all Taylor Laminated Plastics. See for yourself how these versatile materials can help you produce your product or part better, faster and at lower cost. Ask for catalog P4.




PROGRESS of a Century

If you should check a list of companies operating in the United States in 1855 — the year of our founding — you would find that very few indeed have been able to survive the economic upheavals of nearly a century. Survival is conditioned upon maintaining high quality standards at all times.

SUPERSTRONG boxes and crates have always enjoyed a reputation for dependability because of their sturdy construction . . . SUPERSTRONG container design has been quick to adapt to changing shipping conditions . . . SUPERSTRONG service is undergoing constant expansion in order to handle customer requirements more quickly and efficiently.

You can't go wrong with SUPERSTRONG.

RATHBORNE, HAIR AND RIDGWAY BOX CO.
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS



We'll help you design

a better spring

● Maybe the performance characteristics can be improved. Maybe the size can be cut, or installation simplified.

Maybe you're using a steel that's all too good for the job the spring has to do. That could put your costs way out of line—and waste precious alloys.

If you want to be sure that you're getting the most out of the springs you use, submit your blueprint or sketch to our spring engineers. These crack designers have worked with countless manufacturers to produce springs to a specified performance, configuration, size, corrosion resistance or price. They've picked up a wealth of experience that can be put to work for you—if you say the word.

Call our nearest office
for more information

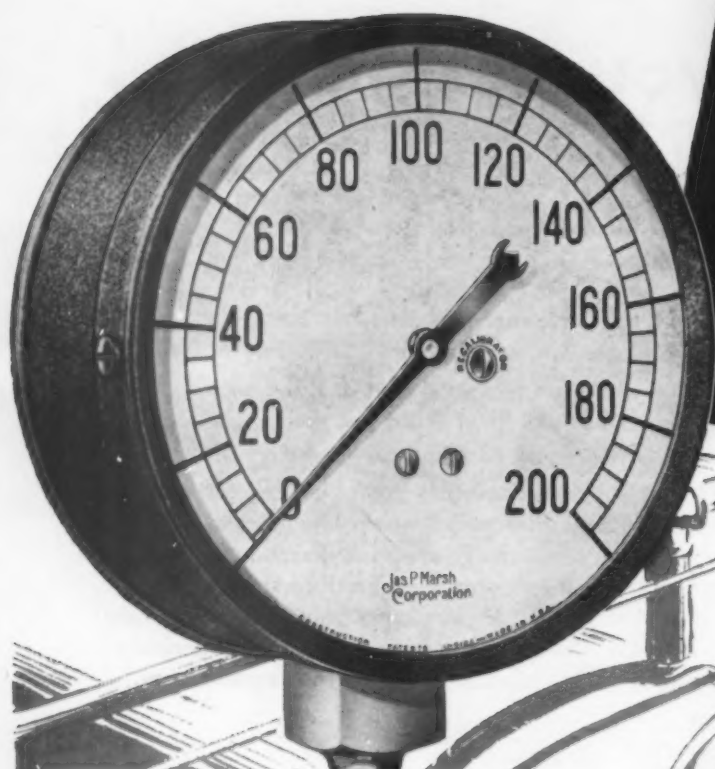
AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO • COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK



AMERICAN

Quality SPRINGS

UNITED STATES STEEL



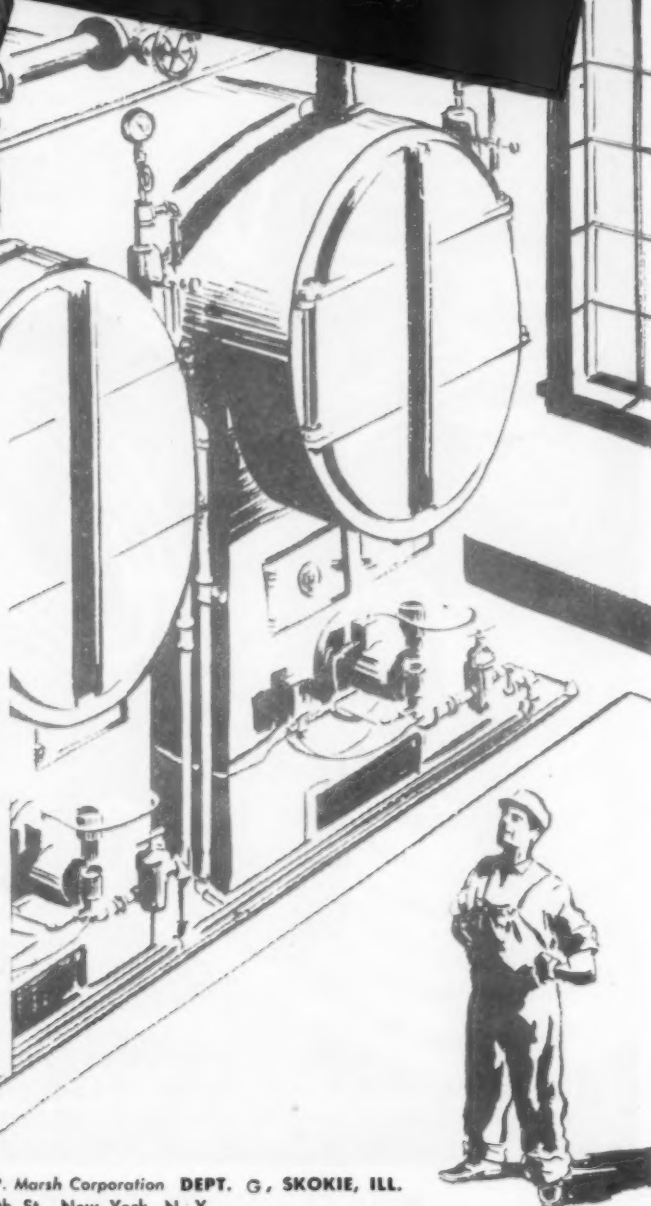
**The
Pressure Gauge
gives the verdict**
(Be sure it's right)

A pressure gauge on a boiler or tank may seem small and unimportant, but have you ever stopped to think what a big part of your plant's efficiency and safety rests squarely on the verdict of the pressure gauge?

Actually it's just about the biggest thing on the boiler or any other pressure equipment. The maximum working pressure of any important equipment was tested by a pressure gauge: if the gauge was wrong the test was wrong. In service, the pressure gauge guides operation: if the gauge is wrong efficiency suffers and safety is imperiled.

Fortunately, manufacturers of quality equipment realize the danger of placing good equipment at the mercy of poor gauges. That is why you find Marsh gauges on the leading makes of boilers, compressors, pumps, hydraulic equipment and food processing equipment. Look around your plant and you will see how true this is. Most significant of all you will find that Marsh Gauges are used by the leading manufacturers of controlling equipment — the manufacturers who know instruments best.

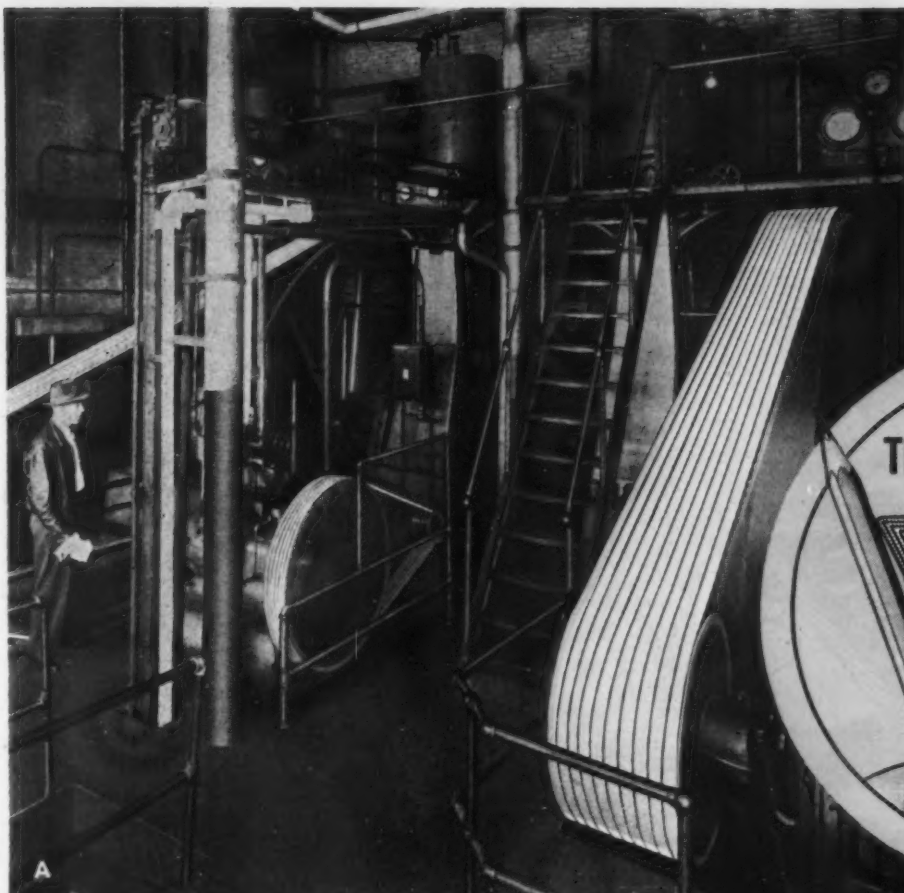
Always remember that you can't see the condition; you can only see the indication of it shown by a pressure gauge. For such a vital function only the best is good enough — and that means MARSH.



MARSH INSTRUMENT CO. Sales affiliate of Jas. P. Marsh Corporation DEPT. G, SKOKIE, ILL.
Export Dept. 155 E. 44th St., New York, N. Y.

"THE STANDARD
OF ACCURACY"

MARSH GAUGES



These big compressors of the Montana Service Corp., Butte, Montana, are driven by Gates Vulco Ropes from grooved sheaves on the motors to flat faced flywheels. Mr. Oscar Olson, Plant Engineer, reports excellent service from these Gates Vulco Rope V-flat drives.



This test shows how the Concave Side gives you a real saving in V-Belt costs

If you are interested in lower operating costs, make this simple test:—

Take any V-belt and bend it as it bends in going around a pulley. As the belt bends, grip its sides with your fingers and thumb. You will feel the sides of the belt bulge out!

This bulging gives a straight-sided V-belt the shape shown in figure 1-A. (See diagrams at right.) Clearly, this shape does not fit the sheave groove. The sides of the bulging belt are forced to press unevenly against the V-pulley—and this concentrates the wear along the middle of the sides.

But when you bend a V-belt that is built with the Concave Side, you find that the sides become perfectly straight—as shown in Figure 2-A. This shape precisely fits the sheave groove.

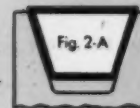
Because there is no bulging, the sides of the Gates Vulco Rope always grip the full face of the V-pulley

What Happens When a V-Belt Bends

Straight-Sided V-Belt



Gates Vulco Rope with Concave Sides



How Straight-Sided V-Belt Bulges in Sheave-Groove. Sides Press Unevenly Against V-Pulley Causing Extra Wear At Point Shown by Arrows.

The Concave Sides Fill Out to a Precise Fit in the Sheave Groove. No Side Bulge! Sides Press Evenly Against the V-Pulley—Uniform Wear—Longer Life!

evenly and therefore wear uniformly—resulting in longer belt life and lower belt costs for you.

Only V-belts made by Gates are built with concave sides. Whenever you buy V-belts, be sure you get the V-belt with the Concave Sides—The Gates Vulco Rope!



CS-514

VULCO ROPE DRIVES
ENGINEERING OFFICES AND JOBBERS STOCKS
IN ALL INDUSTRIAL CENTERS

THE GATES RUBBER COMPANY

DENVER, U. S. A.

The World's Largest Makers of V-Belts

...a Name to Remember

ACCO



TRADE
MARK

when the Need Develops...

Consider the advantages of purchasing any one of the variety of products made by **American Chain & Cable**.

- Years of experience manufacturing products illustrated.
- Wide range of engineering practice.
- ACCO district offices throughout the U.S.A.
- Nearby distributors to serve you.
- Manufacturing responsibility and a determination to make ACCO products "intentionally better."

Write for information on the ACCO products illustrated.

R-P&C VALVES...

Bronze, Electric Iron & Cast Steel
Valves and Steel Fittings

R-P & C VALVE DIVISION



MARYLAND BOLTS and NUTS...

THE MARYLAND
BOLT and NUT COMPANY



WRIGHT HOISTS and CRANES...

Wright Hand Hoists,
Speedway Electric Hoists,
Cranes, Hydraulic Presses

WRIGHT HOIST DIVISION



OWEN SPRINGS...

Springs and Units for
Mattresses and Furniture

OWEN SILENT SPRING DIVISION



CASTINGS...

Reading Electric Steel
ACCO Malleable

READING STEEL
CASTING DIVISION
AMERICAN CHAIN DIVISION



"ROCKWELL" and TUKON HARDNESS TESTERS

WILSON MECHANICAL
INSTRUMENT DIVISION



MANLEY AUTOMOTIVE EQUIPMENT...

Presses, Jacks,
Wrecking Cranes, etc.

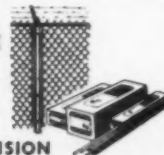
MANLEY DIVISION



PAGE CHAIN LINK FENCE

Welding Wire,
Shaped Wire,
Manufacturers' Wire

PAGE STEEL & WIRE DIVISION



PENNSYLVANIA LAWN MOWERS...

Power and Hand Mowers

PENNSYLVANIA LAWN MOWER DIVISION



AMERICAN CHAIN & CABLE COMPANY, INC.

BRIDGEPORT • CONNECTICUT

NOT MORE DOLLARS — BUT BETTER DOLLARS

WITH the belated placement of defense orders now under way, government becomes a big buyer of materials. It begins to feel what industry has been feeling for many months past. The Congressional Joint Economic Committee is surprised and shocked to learn that the cost of military procurement rose by 25% during the second half of 1950, and deplores the situation as a threat to national safety. Industrial buyers have seen that situation developing inevitably (see "Buying Inflated Bullets" in last month's issue) but their warnings have been unheeded.

Up to this writing—and it is nine months since the outbreak of the Korean crisis which sparked our current mobilization program and the latest inflationary whirl—government policy has deliberately failed to tie problems of pricing with problems of cost, and every month of vacillation and delay has made the problems more difficult of solution.

The appeal for voluntary holding of the price line failed, as everyone knew it would—not because of greed or opportunism, but because of rising costs. The price "controls" have largely been limited to cost-of-living items, and limited to control of mark-ups, or margins for distribution. The basic cost continues to rise. The price "stabilizers" are talking in terms of "rollforwards", which sounds suspiciously like escalation and price at time of delivery. That calls for cost-of-living wage adjustments and increased security benefits, and costs go up again. Industrial buyers have been calling attention to this for a long time, but their contention—that you can't peg the value of the consumer's dollar while the producer's dollar is shrinking—has fallen on deaf ears.

A few weeks ago, eastern housewives staged a buyers' strike because of fantastic prices on meat. About the same time, government commodity buyers staged a buyers' strike in the international tin market. That is the buyer's recourse, but it does not go to the root of the problem. We can get along, temporarily, without meat on the table. Perhaps we can get along, briefly, without stockpiling tin. But we can't equip an army, navy and air force for national defense, and we can't stay in business to provide that equipment and the goods to maintain a high standard of living, without continuing to buy, even with 31-cent dollars.

What we need, at every level of the economy, is not more dollars but better dollars. About the only bright spot in an extremely dim economic picture right now is that the shoe of economic cowardice is beginning to pinch the policy makers where it hurts—in their own role as purchasers. That raises the hope that inflation may yet be attacked at the cost level before it is too late.

Stuart F. Henrity

TODAY *in Chemicals and Plastics*

Plastics are now essential materials, no longer to be thought of as substitutes. Employed more and more for necessary end uses, plastics are being chosen in terms of sound application as well as material availabilities. Monsanto's Plastics Technical Council, Springfield, Mass., offers help and recommendations to prospective users.

Paper makers are looking askance at rosin prices as sizing bills grow heavier. Alert mills, however, are using Monsanto Mersize* to cut sizing bills by one third. Mathematics is simple—with frozen rosin prices, high savings with Mersize are greater than ever.

Chlorine output is limited by capacity of existing plants, and in some cases by available supply of power. Monsanto is doing its share toward increasing chlorine plant capacity—has recently completed design and engineering of 25-ton-a-day chlorine plant for Marathon Paper Company, Marathon, Ontario. Work is also proceeding on two others, including a plant for the Chemical Corps at Muscle Shoals, Alabama.

Wool spinners still have something to smile about, despite heavy wool costs on the world market and controlled prices at home. Borrowing from experience with Syton* on wool, mills are pulling production costs down with Syton on blends—rayon, nylon, viscose and other fibers.

Rayon staple behaves like serrated wool fiber with Syton . . . Wool-rayon yarn is 10 to 30 per cent stronger, more uniform . . . Resulting economies are in evidence, from picker to weaving room.

Everybody benefits by prompt return of containers, since new drums—and especially new carboys—are hard to find. Right now, "empties" are the key to how fast many hard-to-get items flow back to chemically hungry industries.

In the face of substantial advances in the prices of some chemical cleaning materials, the price of Santomerse* No. 1 represents a worth-while value where an all-purpose detergent is required.

New agreement just announced between NPA and PAD (National Production Authority and Petroleum Administration for Defense) specifies that PAD will have authority over production and distribution of tetraethyl lead fluid, petroleum cracking catalysts, special inhibitors used in gasoline, lubricating oil additives, fluids and additives made especially for oil and gas drilling and demulsifiers . . . This affects numerous Monsanto petroleum additives.

It is suggested that purchasing agents get details of Order M-300, new "over-all allocation order" for chemicals issued March 1 by the National Production Authority . . . MONSANTO CHEMICAL COMPANY, 1700 South Second Street, St. Louis 4, Missouri.

*Reg. U. S. Pat. Off.



SERVING INDUSTRY...WHICH SERVES MANKIND

Highlights

This issue's important features summarized for the busy reader



From now on, and in an ever-increasing degree, purchasing agents must learn to work within the pattern of **Governmental Controls**. Despite the experience gained under comparable circumstances and needs during the wartime years, the pattern of control to date is tentative and many of the old problems are recurring, particularly in that it imposes undue hardships on many companies. In due course, stated channels will be set up to provide relief for the individual company facing such conditions. Meanwhile, certain less formalized procedures are recommended. The article on page 79 tells how to work with controls and how to go about making application for exceptions.

Subcontracting is one of the techniques relied upon to relieve the plight of the smaller company by bringing it directly into the larger production program. It is also expected to answer some of the major problems of procurement and production on the part of the prime contractor. How effective will subcontracting be as a general industrial policy? The monthly poll of purchasing opinion is directed to this important question. Turn to page 77.

Another technique that is being developed within the purchasing field itself to meet problems of shortages and substitution is that of **Purchasing Equivalents**. End use is the determining factor in the selection of materials, and there are many alternative ways which may lead to a desired end result. The article on page 87 offers some timely and pertinent suggestions.

Recent industrial research has made some important contributions to the scope of materials available for application to modern needs, materials with special properties that are extending the range of engineering possibilities. Speaking at the recent conference of Public Utility Buyers, R. C. Bergvall told how some of these new materials are influencing **Equipment Design**. His talk is reported on page 101.



Other conference addresses include a discussion of the **Socialist Menace**, by N.A.P.A. President Jones (page 97), a first-hand report on the decline of **Socialism in England** by Col. W. F. Rockwell (page 96), a report on the expanding capacity of the **Steel Industry** in America, by E. L. Shaner (page 99), and an analysis of the critical situation in **Copper**, by Dr. Zimmerman, (page 100).

This month's **Guest Editorial** (page 71) is contributed by Bruce D. Henderson, N.A.P.A. Vice President for District No. 6. Mr. Henderson is a dual contributor to this issue, in his role as a conference speaker at the Pittsburgh meeting. In the address reported on page 111, he outlines some proved principles and policies of **Inventory Control**, as put into effect at the Westinghouse plants with notable results in the way of service and economy.

Among the newer products that are playing an important role in modern industrial operations are **Cellular Rubber** in standard forms and specially molded shapes, and the **Infrared Light** bulbs used for a wide variety of baking, drying, degreasing, dehydrating, and preheating operations. The articles on pages 90 and 92 bring information from experts in this field to help the purchasing agent do a better job of buying these products for effective and satisfactory applications.

The perennial problem of how to measure and evaluate **Purchasing Performance** is the subject of the article on page 73, based on a recent discussion forum of representative purchasing executives on this topic. Without attempting to arrive at a definite rating formula, the approach in this study is to enumerate the factors of purchasing which are capable of measurement, and to determine the significance of such measurements. The practical purpose of this method is to provide a factual analysis of the purchasing operation, disclosing opportunities for improvement and setting standards of comparison with past performance. The compilation of measurable factors is surprisingly extensive.



A complete **Purchase Order System** tailored to fit in a standard card file on the buyer's desk is described on page 115. If you are troubled by cumbersome records, this may be the answer for your company.

Leo T. Parker's monthly review of pertinent decisions on the **Legal Aspects** of purchasing (page 120) covers two timely topics—the effect of Fair Labor Standards and of Interstate Commerce laws.

Are you making full use of these monthly departmental features compiled especially for the purchasing agent? The **Washington Previews** (page 13) keep you informed on current developments in governmental policy. Another section is devoted to **Office Equipment and Forms** (page 181). Informative **Trade Bulletins and Catalogs** listed on page 19 are yours for the asking. **New Products and Ideas** are also reported (page 130).

How to Get Steel for Maintenance and Repairs use NPA Regulation No. 4

Any business—large or small—may now use a DO rating to obtain limited quantities of steel for maintenance, repairs and minor capital additions. The rating to apply is DO-97 as authorized by the NPA's new Regulation No. 4.

Obviously the use of this rating does not automatically get the steel because it is impossible to maintain complete stocks under present conditions. However, it does assure your order of preference over unrated orders and equal treatment with all other orders bearing a priority rating. If we have the steel you get it. Moreover, we can in turn extend

the rating which should help us to maintain stocks for your future needs.

Because of broken stocks, we suggest you give us alternate sizes, gauges and qualities that would be acceptable. In this way you increase the chances of getting steel you will be able to use.

And remember, if your order falls within the provisions of Regulation No. 4 take advantage of it—use your rating! You can be sure that we will make every effort to take care of you as promptly and fully as possible.

If you do not have this Regulation No. 4 we will be glad to send you a copy.

PARTIAL LIST OF PRODUCTS—BARS • STRUCTURALS • PLATES
SHEETS • TUBING—IN CARBON, ALLOY & STAINLESS QUALITIES

RYERSON STEEL

STEEL-SERVICE PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • DETROIT • CINCINNATI • CLEVELAND
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

Purchasing Agents at the Crossroads

By Bruce D. Henderson



HOW important is purchasing and how important is the purchasing agent? As purchasing agents, can we look at the road ahead and measure ourselves against the task that we see? If we can, maybe we can not only appraise ourselves, but we can foresee our destiny.

The road ahead is clearly going to be a rough one. In the last ten years, there have been only three periods of six months each in which procurement has not been the dominant factor in American production. In the ten years ahead, it is hard to believe that there is any possibility that basic shortages will not always be with us and procure-

ment will be the dominant factor in our production.

As I see it, the purchasing agent's responsibility can be stated very simply. He is responsible for making available the material required when it is needed for use in such a manner that his company will realize a maximum profit.

As purchasing agents, how do we stack up? Are we up to the job? Certainly in the past ten years, we have made progress as purchasing agents, and purchasing itself has grown in stature; but few of us can readily say that purchasing has arrived at full maturity and that we, as purchasing agents, have fully proved that we are prepared

Bruce Henderson is General Purchasing Agent of the Westinghouse Electric Corporation, Pittsburgh, and is directly responsible for all purchasing activities of the Corporation, which has extensive manufacturing operations in thirteen states, from Coast to Coast. He acquired his present title and responsibilities on January 1, 1951, some ten years after joining the Westinghouse organization as an Assistant Buyer. In the course of his advancement in the department he has served as Assistant Purchasing Agent with the Small Motor Division at Lima, Ohio, Purchasing Agent and Supervisor of Stores for the Meter Division at Newark, N. J., and Manager of Purchasing, Stores, Shipping, Traffic, Receiving and Salvage for the Transformer Division at Sharon, Pa. In May, 1950, he was brought into the company headquarters at Pittsburgh as Assistant to the Vice President in charge of Purchases.

Mr. Henderson was born thirty-five years ago in Nashville, Tenn., and graduated from Vanderbilt University in 1937 with a degree in electrical engineering. While still in school, he began his business career as a door-to-door Bible salesman during the summer months to pay his school expenses. Upon graduation, he joined the Frigidaire Division of General Motors as a trainee, and subsequently spent a year and a half as sales correspondent with the Leland Electric Company of Dayton, Ohio, before resuming his studies at the Harvard Graduate School of Business Administration.

His principal avocation is flying his own plane—a Beech Bonanza, fully equipped with airline equipment for night and bad weather flying.

Mr. Henderson has a commercial pilot's license and is fully qualified for instrument flying. He has more than two thousand hours of flying experience to his credit. A considerable portion of that flying time was spent in week end commuting between Sharon and Miami, Florida, in 1949—and for a very good reason. In the spring of that year, on a flying week-end visit to the southern city, he met the former Frances Fleming. Every week after that, he flew his plane to Miami, until he married Miss Fleming in September.

A keen student of purchasing, with an original mind and broad practical vision, he has been outstandingly successful in putting his ideas to work and generous in sharing his experience with others in the purchasing field. He has been a frequent contributor to *PURCHASING Magazine*, and within the past year has addressed some twenty-five local Purchasing Agents Associations from coast to coast on the subject of inventory control and its relation to purchasing. He has also been a featured speaker on the programs of district and group conferences. His address at the recent Midwinter Meeting of the Public Utility Group of N.A.P.A. appears elsewhere in this issue.

He was one of the founders of the Youngstown Association, and served that group as its Secretary and as President. Last June he was elected Vice President of the National Association of Purchasing Agents for District 6. In that capacity, he represents on the National Executive Committee the Akron, Canton, Cincinnati, Cleveland, Columbus, Dayton, Erie, New Castle, Northwestern Pennsylvania, Pittsburgh, Springfield, Toledo, Tri-State, and Youngstown Associations.

for the job ahead. Purchasing has come of age, but neither purchasing nor the purchasing agent has yet reached its manifest destiny.

The years ahead look like the years of destiny for the purchasing agent. Some of us will meet the challenge and rise to the top of American industry. Some of us will fall by the wayside.

Our increasing responsibilities are sweeping away a whole way of thinking. The purchasing agent of today isn't really worthy of the title who thinks his job is to:

1. Wait until he gets a requisition.
2. Place the order with the lowest bidder.
3. Plead with the supplier to ship it sooner.

The purchasing agent who meets the challenge will have a broader horizon. He starts by carefully surveying his future needs. He follows through by coordinating his plans and policies at the top management level with inventory policies, production and engineering planning, and sales objectives. In the buying itself, he negotiates not only price, but the entire question of value received. Naturally, he and his organization use expediting to cover the unusual and the emergency. But the major problems of assurance of supply have been solved by advance planning of sup-

plier relationships and wise choice of both buying policy and ordering practice.

We can already set up the specification for tomorrow's purchasing agent. His basic qualifications are clear.

1. He is a good salesman of ideas.
2. He has mastered the art of policy thinking.
3. He is an able organizer and administrator.
4. He is technically and commercially skilled in his field.

He must be a good salesman of the intangible idea. No longer do we think of purchasing as the task of silently choosing between alternatives. The good purchasing agent must be a superb salesman of the intangible idea. He must sell management and his colleagues in other departments upon the modification of inventory plans, scheduling techniques, design details, and many other quantitatively indeterminate decisions which must be integrated with procurement considerations. The same salesmanship must be used in supplier negotiations. Even in the simplest of expediting, the purchasing agent must sell the story that he should be a preferred customer because he is a better customer. Buying, itself, is the job of selling whether we are exchanging money for material or material for money. Really top-drawer buying

frequently requires selling a policy. For example, try to arrange for your supplier to hold open scheduling space for your order which you will not be able to place until sometime in the future. Or try to arrange for your supplier to consign stock to you instead of selling you the stock. Sales ability is a prerequisite of good purchasing.

Tomorrow's purchasing agent will be a proficient exponent of the art of policy thinking. This is something more than the exercise of common sense or the use of good judgment. It is a very difficult skill to acquire, and real talent is scarce. Policy thinking requires again that we deal with intangibles and probabilities, rather than with the concrete and the definite. Its essence is the establishment of objectives and planning to reach those objectives. The basic steps are well-known:

1. Establishing the objective.
2. Identifying the problem.
3. Examining the alternatives.
4. Choosing the course of action.
5. Planning the method of approach.
6. Setting the sequence and timing of the move.
7. Locating the check points of progress.
8. Insuring adequate controls to steer the program.

(Please turn to page 316)

WASHINGTON ALPHABET

A guide to the Federal agencies participating in the national program of mobilization for defense

AEC Atomic Energy Commission	ECA Economic Cooperation Administration	OMF Office of Materials and Facilities (Dept. of Agriculture)
CDA Civil Defense Administration	EPS Emergency Procurement Service	OPS Office of Price Stabilization
CEA Council of Economic Advisers	ESA Economic Stabilization Agency	ORA Office of Requirements and Allocations (Dept. of Agriculture)
CIA Central Intelligence Agency	FDB Food Distribution Branch (Dept. of Agriculture)	PAD Petroleum Administration for Defense (Dept. of Interior)
DFA Defense Fisheries Administration (Dept. of Interior)	GSA General Services Administration	PCISIR President's Commission on Internal Security and Individual Rights
DMA Defense Minerals Administration (Dept. of Interior)	NPA National Production Authority	PMA Production and Marketing Administration (Dept. of Agriculture)
DMB Defense Mobilization Board	NSC National Security Council	RDB Research and Development Board
DPA Defense Production Administration	NSRB National Security Resources Board	RFC Reconstruction Finance Corporation
DPA Defense Power Administration (Dept. of Interior)	OADR Office of Aviation Defense Requirements	WSB Wage Stabilization Board
DSCR Division of Selective Credit Regulations (Federal Reserve System)	ODM Office of Defense Mobilization	
DSFA Defense Solid Fuels Administration (Dept. of Interior)	OIT Office of International Trade	
DTA Defense Transport Administration (Interstate Commerce Commission)		

PART 1.

Can't Measure Purchasing?

By **Stuart F. Heinritz**

This article is based on discussion at an Industrial Management Institute of purchasing agents sponsored by the University of Wisconsin, held at Madison, Wisconsin, February 20, 1951

THE measurement of purchasing performance is one of the perennial problems of purchasing administration. As early as 1931, just twenty years ago, the National Association of Purchasing Agents, in cooperation with the National Association of Cost Accountants, made an all-out effort to find and define methods or yardsticks for such measurement, through the medium of a nation-wide contest with substantial prize awards. Forty-five thoughtful papers were submitted in this contest by the members of these two associations, embodying many suggestions and plans. These papers constituted an important contribution to the growing science of purchasing, but it was generally conceded that they failed to provide a practicable and conclusive answer to the problem.

The late Donald G. Clark, one of the prize winners in that contest and an outstanding leader in both the theory and practice of purchasing, at that time defined four important reasons for measuring purchasing efficiency:

To enable the purchasing executive to comprehend more clearly the requirements and possibilities of his job.

To enable management to visualize with accuracy just what the purchasing department is accomplishing in the way of spending or saving the company's money.

To secure real efficiency through the only known method, of setting a standard and measuring the approach to it.

To provide a basis for comparison with other competing or non-competing industries.

In retrospect, it now appears that the acknowledged failure of that pioneering study was due to its emphasis on the third and fourth of these stated objectives, which visualized an objective rating scheme which might be applicable to all purchasing departments. Some fifteen years later, in 1946, in discussing the still pertinent topic, Mr. Clark declared that in the light of his more mature experience and judgment, "I no longer believe it is possible to do the measuring by a mathematical formula or to establish any absolute yardstick for measuring purchasing efficiency. I have also abandoned the idea that it is possible to measure comparatively so that the purchasing department in one industry or in one company can be compared with ac-

curacy with the purchasing department in another industry or even in another company. The trouble with the yardstick idea is that sometimes the yardstick has to be 42 inches long and sometimes it cannot be more than 12 inches. Circumstances between companies vary so much that what is efficient under one set of circumstances is not necessarily efficient under another set. . . I still stand by the proposition that purchasing efficiency can be measured, not necessarily absolutely, mathematically, or comparatively. . . The outcome will never be, I am sure, the ability to take two purchasing departments and rate one as 98.44% efficient while the other is only 86.11% efficient. This, however, is not the goal of our endeavor."

His alternative proposal at that time was a series of check points, dealing with both tangible and intangible factors—personal qualifications and ability, stated policies, standard procedures, service to other departments, cost of materials, cost of administration, building of good will, etc.—which could be gauged and evaluated through observation and audit on the part of management.

Why Evaluate Purchasing?

The question has again come to the fore, within purchasing circles. Whatever the merits of the management approach, it does not completely satisfy the objectives which purchasing men themselves are seeking. In a recent round-table

discussion of the topic, these objectives were listed as follows:

To determine the work load (type and quantity) so as to determine personnel requirements.

To improve performance.

To discover reasonable potentials

beyond present performance.

To determine what the purchasing job is worth.

These objectives are in no sense at variance with the objectives of a management audit. As a matter of fact, they definitely go beyond

measurement to action and improvement. While the factor of "efficiency" is implicit in this viewpoint, it may be significant that the word itself has given way to "performance". It is interesting to compare this listing of objectives with the 1931 version; it reflects a much farther advanced concept of

the problem. Evaluation is regarded as a means to an end, and surely improved performance is the major aim of management as well as of departmental activities. The search for higher potentials is more purposeful than the determination of a departmental rating. Measurement can be constructive.

Evaluation Implies Measurement

Any program of evaluation implies measurement. The problem thus resolves itself first of all into finding elements of the purchasing job that are capable of measurement. There are a surprisingly large number of such factors in the day-to-day purchasing operation. Some of them are, of course, much more significant than others.

The second step, therefore, is one of interpreting these factors. Once we have determined what is measurable, and what is worth measuring, we can proceed to the establishment of standards or norms, if that appears to be desirable as a means toward evaluation and improvement.

The term "standard", as here used, needs some clarification. It is not used in the sense of indicating an ideal situation, nor one that

should, necessarily, be attained in practice, but rather as a point of comparison. The difficulty, or even impossibility, of establishing standards applicable to any considerable number of different companies has already been mentioned. But wherever a factor exists that is capable of measurement, a usable standard for that factor can be found in previous performance in the particular company's operation. Objectively, and taken by itself, that standard may have little meaning, but it provides a point of comparison from which a measurement or a series of measurements can be taken. As further experience and data are accumulated, and as performance is improved, the standard may be raised, and it gains in significance as a measure of satisfactory performance or as a goal.

Evaluation of Procurement Performance

The basic responsibility of the purchasing department is to have materials on hand when needed. Its success or failure in this respect is measurable in a number of ways. Since the ideal would be to have a perfect record—no failures—it is obvious that most measurements in this category would probably be in the nature of demerits on a performance rating scale. This is psychologically bad. It is also unrealistic. If past experience is a guide, a certain number of failures are to be expected in the normal course of operation, so perhaps the past record would be a more reliable "standard" even though it represents an undesirable condition.

Furthermore, these sometimes unavoidable failures are not necessarily a reflection on the calibre of purchasing service. Particularly in times like the present, the "needed" materials are actually not obtainable in the quantities requested. Perhaps, in view of market conditions, the request is an unreasonable one, or some more available material should have been specified. The failures may also result from sud-

den, unforeseen requirements, insufficient lead time, or any one of a dozen other reasons outside the purchasing department. But the purpose of measurement is not to place the blame; it is rather to improve performance. Measurement may be of greatest service in calling attention to the most frequently recurring shortcomings so that corrective measures may be applied, whether in purchasing or in some other department. The goal is to eliminate or minimize the occurrences by getting at the cause. Result: better procurement.

But failures alone, or the absence of failures in the service of procurement may not be the true measure of purchasing performance. A purchasing department may avoid the actual failure, but at the cost of operating in a constant state of crisis and by constant reliance on expensive and thoroughly inefficient emergency measures. With these qualifications in mind, what measurable criteria are available to aid in evaluating performance. Eight criteria are suggested:

1. Machine down-time due to

lack of materials. This can be measured in number of instances, in hours, or in cost. Each of these three approaches has its own significant bearing on the problem. The cause may lie in purchasing, or in an inadequate inventory policy, or in too close production scheduling.

2. Number of schedule revisions necessary due to lack of materials. The actual loss from machine down-time has been avoided, but a lack of planning and coordination is indicated. Causes may be the same as in the preceding case.

3. Number of successful substitutions made by purchasing to avoid down-time or schedule revisions. This is one of the few "plus" measurements coming within this classification, and one that could easily be overlooked, yet it is a very important indicator of the know-how, resourcefulness, and competence that underlie good purchasing performance. A warning should be injected: a high number of such instances is not altogether a good sign, since the occasions for such action should not arise frequently. This measurement is most mean-



HANK REITER
"WE PREFER TO DO ALL OUR BUYING
IN THE OPEN MARKET"

This still does not preclude the intelligent interpretation of both standards and current performance for proper evaluation and for improvement.

The general classifications of factors to be measured and evaluated should also be considered at this point. In the round-table discussions previously referred to, six major fields came under review. These were: performance in the discharge of the procurement or service responsibilities of purchasing; inventory performance; price performance; departmental administration; cost saving; and various intangibles.

ingful when considered in connection with the previous two.

4. *Follow-up action required, beyond routine.* A certain amount of follow-up action is inherent in every purchasing operation, and is handled as a regular part of purchasing duties, particularly on key items and special orders. When exceptional follow-up action becomes necessary to get deliveries, or when this situation applies to an unduly large proportion of orders, it may indicate that the wrong suppliers are being used, or that the importance of prompt deliveries is not being sufficiently impressed upon suppliers, or a laxity in securing acknowledgments or delivery promises, or that, in view of the times, a larger and more active expediting staff is required to maintain delivery schedules. The record may also justify mounting travel and telephone bills in the purchasing department.

5. *Number and amount of premium transportation charges incurred.* Delivery failures may be avoided through the use of express or air shipments in place of normal rail or truck service. This adds to the cost of materials purchased. In

the individual case, the extra investment is usually well justified, but it should not be lost sight of. Too frequent reliance on such premium transportation indicates a condition that needs correction for better purchasing performance.

6. *Number of "rush" orders.* As in the preceding case, individual rush or emergency orders are to be expected, but a large or increasing number of such transactions calls for investigation and remedial action. Emergency orders are likely to be more expensive, and they preclude the possibility of thorough purchasing practice. The cause may lie in faulty planning or the allowance of inadequate lead time by the using departments.

7. *Number of overdue orders in the open order file.* Failure to make delivery on the promise date is essentially a failure on the part of the supplier, but it is none the less a threat to the buyer's production schedules, and it is a responsibility of the purchasing department to avoid such situations if possible.

8. *Rejections of deliveries.* Failure to supply materials of satisfactory quality is again a failure on the part of the supplier. Repetition

of such failures, or a substantial number of rejections, may indicate wrong suppliers are being selected.

Here, then, are eight measurable factors relating to the manner in which the purchasing department meets its primary responsibility of having needed materials on hand in time for the scheduled use. Is the performance good or bad, under the prevailing circumstances? The original compilation does not answer this question; it merely gives a factual picture of certain elements of purchasing activity that provides a basis for analysis and for the direction of planning and effort. But when the process is repeated, a month or three months later, there is a basis for comparison and there should be an improvement. When the measurement is carried on for a year, there may be a basis for establishing a norm for that particular operation. It is to be hoped that this norm will be substantially more favorable than in the original analysis, for the objective of measurement is to improve performance. Then, for what it may be worth, the department head or analyst who wants to express performance in a percentage rating can do so.

Evaluation of Inventory Performance

The purchasing department may or may not be responsible for inventory policy and control. If this jurisdiction exists, obviously it is an area in which performance should be scrutinized. But in any case, purchasing and inventory are so closely related that it may be worth while to see whether there are any pertinent criteria bearing on the purchasing operation. Inventory itself can easily be measured, by units or by dollar value, and these measurements are made as a matter of course in virtually every company at least once a year. As a matter of performance measurement, those figures must be related to other factors.

1. *Forward coverage.* From the standpoint of assurance of supply to maintain manufacturing schedules, the important measurement is in terms of time—the coverage for 30 days, 60 days, or some other predetermined period of estimated requirements at current rates of use. The length of forward coverage desired is a matter of policy. Purchasing performance would therefore logically be measured in terms of adherence to that policy. There are two or three points that should be observed in such inventory meas-

urements in order to clarify the picture and make the figures meaningful. The overall inventory doesn't mean very much in this particular measurement, because the various items have varying importance and may be subject to different policies as to coverage required. It is best, then, to make this calculation individually in respect to a selected list of key commodities, or to various inventory classifications.

When this method is used, we immediately have at hand another fact of considerable significance. The "weakest link" in coverage is the item in shortest supply. Even if procurement is adequate in respect to every item but one, the inventory may be totally inadequate to support the manufacturing schedule if that one essential item is lacking, so perhaps this low figure may be the true measure of purchasing performance. There is another related approach in the possibility of measuring the balance or imbalance of inventory on the basis of these figures, for in an unbalanced inventory not only is the critically low item a hazard to continuity of operations, but any excess of other items becomes idle inventory until the discrepancy is corrected. There-



HANK ROTHHEL
"THAT REMINDS ME, -WE AREN'T BUYING UNTIL THINGS STABILIZE A BIT."

fore it may be well to measure the spread in coverage among the key items selected for measurement or, on a broader scale, between the various inventory classifications. A wide spread indicates poor inventory performance, a narrow spread represents the most effective investment of inventory dollars.

There is still another point which may be useful to measure. Forward coverage is accomplished in two ways—by the inventory actually on hand, and by the supply rep-

resented by goods in transit or on order. To the extent that adequate coverage may be provided by commitment rather than completed purchase, working capital is conserved and inventory carrying charges avoided; this represents better purchasing performance for better inventory performance. A breakdown of coverage along these lines is measurable and can be very helpful.

2. *Cost of forward coverage.* The "insurance" of forward coverage demands a premium in the form of inventory costs. The ultimate result is an increase in the actual cost of materials, above the purchase or invoice price. It is therefore of concern in any comprehensive evaluation of purchasing performance, even though it may actually reflect expenses of storeskeeping or be attributable to basic inventory policy. This cost is a legitimate business expense, and the inventory protection is assumed to be worth the

extra cost provided the latter does not get out of reasonable bounds. The measurement, and the comparison afforded by successive measurements in following periods, are of value in checking the latter point and in directing corrective or control action as indicated.

3. *Inventory turnover* is probably the most common measurement of inventory performance. It is a useful criterion, readily measurable and subject to control. It has serious limitations as a measure of efficiency unless it is keyed to other considerations.

4. *Best ordering quantity.* A significant measurement in inventory analysis would be the number or proportion of stock items that are purchased in the "best ordering quantity". It can easily be demonstrated by simple mathematics that on slow moving items, or on items where substantial quantity discounts apply, or where "broken lot"

charges may be incurred by deviation from the standard unit quantities prevailing, the extra investment of larger purchases at the "best ordering quantity" level may return a very attractive dividend in the form of lower ultimate costs. This may be at variance with fixed inventory coverage policies or established maximum and minimum stock levels. It is nevertheless a purchasing responsibility to bring such situations to the attention of inventory control officers, and a measurement as suggested will indicate the extent to which best purchasing performance prevails.

5. *Out-of-stock frequency.* This is another criterion which may reflect either inadequate inventory policy or inadequate purchasing performance. It is a measurement worth noting as a guide to corrective action in either field, as may be indicated when the facts are known and analyzed.

Evaluating Price Performance

There is a natural and completely understandable tendency on the part of management to evaluate purchasing performance largely on the basis of prices paid for purchased materials. While this approach tends to discount other elements of the purchasing responsibility, such as those already mentioned which have a direct effect on ultimate costs, there can be no argument against the fact that price is an important factor. The "right" price is one of the cardinal points in the classic definition of purchasing objectives, and it is obvious that good purchasing performance must secure prices that keep the company in a competitive position in respect to costs. In this discussion, the problem is to find a proper standard against which prices can be measured. Six such standards are suggested:

1. *Previous cost.* This is an important comparison and should be noted in any case. It doesn't prove much about efficient performance, since market conditions may have changed between the time of one purchase and the next. However, it does indicate a change or trend that must be recognized in purchasing and in general management.

2. *Market price.* For most commodities and products, there is published or quoted data on currently prevailing price levels. For purposes of measurement and evaluation, this recognized market price is more significant than the price

paid on previous orders, since the standard is constantly adjusted according to current conditions. It can reasonably be expected of a purchasing department that it shall purchase its company's requirements at prices not exceeding the prevailing market.

In respect to fabricated products, there is usually a range of prices available. This is the reason for securing quotations, and the purchase decision is not always in favor of the product bearing the lowest price tag. A simple graphic device for showing purchasing performance is to indicate the range of prices by a vertical bar on a chart with vertical price scale, and the actual price paid by a point on the bar. The resulting price curve when these points are connected should consistently intersect the lower section of the bars.

3. *Market average.* Individual purchases can be made at the market, yet the timing may be unfavorable. Purchasing performance can be measured by charting the course of prices for key commodities or items, day to day, and indicating the points at which purchases are made. Purchases at currently prevailing market levels, properly timed, can be consistently under the market average for the month.

4. *Market price at time of use.* One of the real tests of purchasing performance is the comparison of prices paid against the market or replacement cost at the time the

materials go into production. This can be charted most simply by setting up the master chart for a key commodity as in the previous instance, indicating purchases as before but with the addition of a horizontal line to indicate the estimated period of coverage.

5. *Published price index.* For a broader view of the purchasing program as a whole, comparison with a standard price index may be the most revealing. Since different commodities and commodity groups frequently move counter to a general trend, care must be taken to select an index that is truly comparable with the range of commodities pertinent to the business. Some of the larger companies have found it advisable to set up a special price index using only the key commodities affecting their own operation and weighted to reflect their relative importance so far as the company is concerned.

6. *Standard cost.* Companies using the standard cost system in their accounting have a ready-made comparison for measuring purchasing performance. Adjustments for short-term fluctuations are usually provided for in the system.

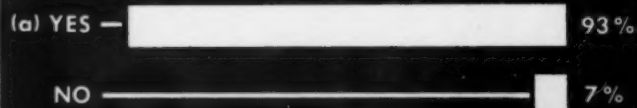
(Measurement of purchasing performance in respect to departmental administration, cost saving activities, and intangible factors, and the use of such measurements in reports to management, will be discussed in a continuation of this article in the May issue.)

Can SUBCONTRACTING Solve Purchasing and Production Problems?

Subcontracting is looming big in the production picture once more. An important factor in industry's contribution to victory in World War II, it is again being used by prime contractors to speed their operations and help rearm the country quickly and with as little dislocation as possible. But subcontracting has its ramifications and problems which had to be overlooked in the urgency of all-out war. Because subcontracting is essentially a part of purchasing, with the subcontractor considered the supplier, we have asked purchasing agents to consider some of the basic questions raised by its widespread expansion and revival as a tool of industrial production.

① In your opinion, will subcontracting be an important factor in:

a. Maintaining operations and employment in industries where civilian output is curtailed?



b. Speeding up defense production?



c. Cost reduction?



d. Avoiding over-expansion of major industries?



e. Checking concentration of economic power?



f. Relieving problems of material supply?



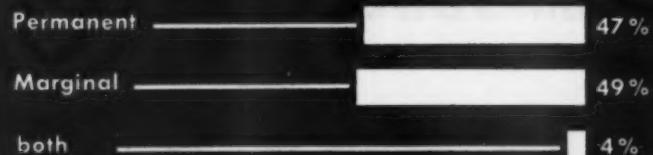
g. Solving problems of conversion to defense production?



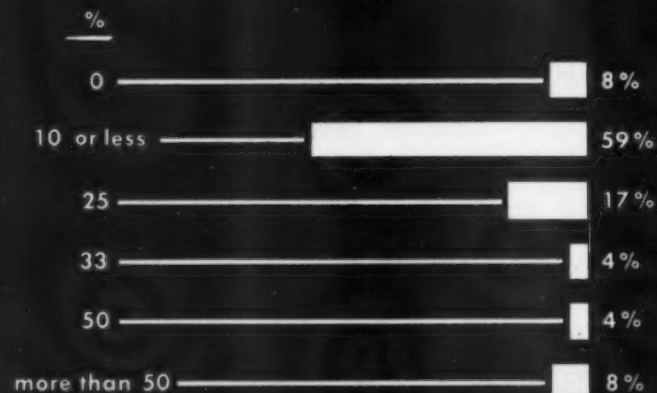
② Do you regard subcontracting as primarily an emergency policy or as a permanent part of purchasing policy ?



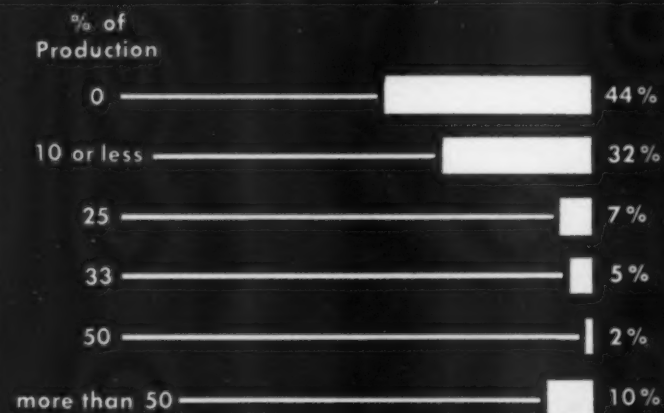
③ In your opinion, will a widespread expansion of subcontracting tend to develop strong and permanent manufacturing sources in specialized fields, or merely serve to bring marginal suppliers temporarily into production ?



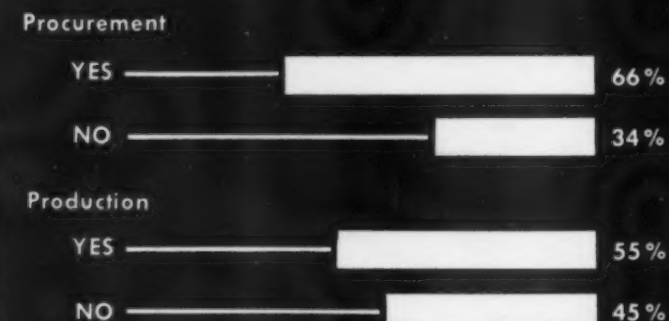
④ Approximately what portion of your company's requirements are being procured by subcontracting ?



⑤ Approximately what portion of your company's production is devoted to subcontract work ?



⑥ Are subcontracting activities of your company (actual or contemplated) expanding ?





Working with Controls

By A. N. Wecksler

WHETHER by omission, re-mission, or commission, Government regulations have an adverse effect on some people. The best intended regulation, while it may be completely just to the main body of those affected, may be completely ruinous to a few who do not conform to the general pattern.

This unfortunate circumstance becomes increasingly apparent when the Government regulations are of an emergency nature—conceived in the need for immediate action and born in an atmosphere of haste. As a result, effects and

considerations which might have been given weight in thoroughly deliberative action, are overlooked, and only after the regulation has been signed, sealed and promulgated is it discovered by some that the action contains the seed of their undoing.

The current emergency is no different in this respect from past emergencies. Already the number of mistakes which have been committed has led to the exasperated comment that the "Government is committed to the repetition of all the mistakes which have ever been made in the past."

Without suggesting that these errors justify an apologist, the question nonetheless remains as to why this is so, and further what the purchasing agent—who bears the main brunt of Government "snafu"—can do about it.

Covering the Field

First—how does it all come about?

The seeds of inequity are inherent in the principle behind any emergency Government control action. Whether the action is directed toward materials, prices, wages, inventory, sales or purchases, the first consideration is how to make it all-inclusive—to bring all those concerned under the umbrella of the control action.

As an example, the National

Production Authority issued a list of 23 classifications of rubber products, with a detailed ruling on how much, if any, natural rubber could be incorporated in the manufacture of each of these classes of items.

An NPA official, in explaining this action, pointed out that the listing roughly included some 40,000 items of manufacture. This explicit listing should have been all-inclusive, and the Rubber Division official said that he couldn't think of anything left out.

But, just in case some item had been left off the list, a further classification is appended to the order referred to as "Any product other than products listed in codes 1 to 23 inclusive." This final category of products is allowed no natural rubber. If, by chance, some producer of rubber goods found himself omitted from the list of 23 categories, he would fall into the 24th catch-all category, and be ineligible for natural rubber. His recourse would be an appeal, asking for special consideration and possible reclassification.

So, obviously, in an effort to be all-inclusive, a Government action tends to transgress against some individuals.

Channels for Relief

What to do about it? There are, of course, various channels of legal recourse, but these are of little prac-

SUMMARY: In the stage of hasty development, many government regulations are bound to contain some elements of inequity and hardship for regulated industries. To correct these cases, there are broad provisions under which relief may be sought and obtained, and these channels will be better defined as the situation is clarified and as an adequate administrative staff is built up. Indications are that the rule of reason will apply. Meanwhile, the chief problem lies in speeding up the processing of appeals.

tical value during an emergency. To be effective, relief must be quickly available, and to meet this need, NPA control actions carry a "hardship clause".

These clauses are usually couched in such broad terms that they can be administered either with a hard and stinting hand or in a generous manner, depending upon the then prevailing conditions.

Among the materials controls, the "hardship" clause in the M-12 copper order is a fairly typical example of the relief clauses used in National Production Authority orders. It states the following:

"Applications for adjustment. . . Any person affected by any provision of this subpart may file a request for adjustment or exception upon the ground that his business operation was commenced during or after the base period, or because any provision otherwise works an undue or exceptional hardship upon him not suffered generally by others in the same trade or industry, or its enforcement against him would not be in the interest of the national defense or in the public interest.

"In considering requests for adjustment claiming that the public interest is prejudiced by the application of any provision of this subpart, consideration will be given to the requirements of the public health and safety, civilian defense, and dislocation of labor and resulting unemployment that would impair the defense program.

"Each request shall be in writing, shall set forth all pertinent facts and the nature of the relief sought, and shall state the justification therefor."

Public health, public welfare, dislocation of labor, safety—these are all so broad that it is obvious that exception to the regulation can be either tight or liberal, and that the policy of interpretation will depend on the supply and demand relationship in copper.

Handling Appeals

"Hardships" are handled in much the following manner: A fabricator who has been undergoing a hardship—especially severe and unusual in comparison with others in his industry—files a request for exception to the terms of the control regulation. If the hardship is due to restrictions on processing of copper,

the complaint or request for relief is channeled to the Copper Division, where a staff of analysts goes into the individual circumstances of the appeal. They recommend the action that should be taken, and this recommendation is reviewed at the upper administrative levels of the Copper Division, and finally approved at the top levels of the National Production Authority.

NPA Orders Modified

Where there are a number of justifiable complaints of the same nature, the NPA modifies the order. As an example, NPA issued several actions prohibiting the manufacture of a large number of items as of a stated date. Also, after a further period, items fabricated of these materials could not be installed.

Obviously, an arbitrary cut-off in processing would lead to a freezing of inventory of materials which might not have other usage. In recognition of the logic of this complaint, the order was modified to permit the "run-out" of material inventory which could not be used except in the manufacture of the prohibited item.

Also, it made sense to permit the utilization of items which had been legally fabricated rather than prohibiting their use after a freeze date established in an arbitrary manner. The regulation was amended to allow such use.

These are simple examples of how industry can bring its complaints to the Government, and obtain some adjustment of regulations.

Wheels Grind Slowly

The big problem is the time it takes to get the Government to reconsider its actions and to remedy the defects of its regulations.

The various Government control agencies are just in the process of building up a staff, and the number of people available to review requests for relief is small. Also as the staff builds up, the new personnel requires a period of education and seasoning before they can be relied on for reasonable action in hardship cases.

Nevertheless the avenue for relief is there—and if the relief is slow in coming, it is due to the clogging-up process inherent in emergency procedures of Government. There is always the problem of one application for relief getting "snowed under" by a large backlog of similar requests from applicants who are faced with a similar prob-

lem, who are not necessarily faced with the same degree of urgency.

Where early action is important, there are expedients for speeding up Government action.

In cases where unemployment is threatened as the result of a materials control action, the labor spokesmen for the working force can join in the complaint; where the complainant can be classed as "small business" (which in itself is an ambiguous term), there are special avenues for obtaining relief; and, although frowned upon by the administrative agencies of the Government, the intervention of a Senator or Congressman can sometimes jog up the speed with which a request for relief is handled.

These expedients are not suggested as normal procedure, but where the routine procedures do not produce results and the circumstances warrant other action, no avenue of relief can be overlooked.

Formal Procedures to Come

At some future date, when materials controls have crystallized, the procedures for appeal against rulings will be more formal. Definite standards of appeal will replace the present broad statements affording relief in case of hardship.

As preliminary as the NPA provisions for appeal are in the case of materials control actions, they are even less developed in the price stabilization structure.

The general price freeze order did not include any provision for relief in the event of hardship. This omission was intended, the reason being the assumption by Office of Price Stabilization officials that it would be all they could do to handle their day-to-day problems of administration without taking up cases of individual hardship.

Adjustments in Process

However, OPS officials recognize the need for appeals procedure and exceptions to the regulations in cases of undue hardship, and they are in the process of working out standards of adjustment which will be incorporated into the various price ceiling regulations.

To those who are impatient of the error in Government action and the delay in adjustment, it is small consolation to know that conditions will be remedied at some future time—but it is just such impatience which creates pressure for greater competence in Government.



A compact purchasing staff of six buyers keeps the cars rolling off Buick assembly lines at the rate of 2,000 per day.

Shortcuts from requirement to receipt

How Buick Streamlines Purchasing

By Dwight G. Baird

Mr. Baird's article deals with the normal activity of Buick in producing cars for the civilian market. Since this study was made, Buick—along with other leading manufacturers in the automobile field—has curtailed its production of civilian models and is devoting a considerable portion of its facilities to the defense effort. Efficient purchasing will be an important factor in this new activity, also.

WITH production running at the highest rate in its history, Buick Motor Division of General Motors, at Flint, Michigan, continues to operate with one of the smallest and most efficient purchasing organizations in the automobile industry. In its 1949 model year, Buick produced 409,138 cars. The goal in the 1950 model year was set at an even half million. That represents production at a rate of 2,000 cars

per day. Yet the Buick purchasing department employs a total of only 43 people, including clerical personnel. There are smaller companies in the field that have purchasing departments nearly twice as large.

Buick's purchasing organization consists of W. J. Brewer, Director of Purchases (also in charge of the traffic department); R. H. Eddy, Assistant Director of Purchases; six buyers, one assistant buyer, 19



W. J. Brewer

Director of Purchases, Buick Motor Division,
General Motors Corp., Flint, Michigan

A correspondence school course in purchasing launched William J. Brewer on his career in the Buick purchasing department. Born at Hancock, in Michigan's upper peninsula, in 1897, he graduated from Calumet High School in 1913, and promptly got himself a job with Buick as a shipping clerk. He has been with the company ever since. Two years after joining the organization, he was made Assistant Superintendent of Stores, and was getting a business education by correspondence. His studies included a course in purchasing, which helped boost him to the post of Assistant Purchasing Agent in 1920. Fifteen years later he was made Assistant to the Purchasing Agent. In 1941 he was promoted to Assistant Director of Purchases. He was named Director of Purchases in 1945. Mr. Brewer is married and has three children. He is an ardent baseball fan, and posts a golf score in the low 80's.

follow-up men, and 15 secretarial and clerical employees. This compact group does all the buying and expediting for the main manufacturing and assembly plant at Flint, and for six branch assembly plants. It procures approximately 2,100 different production parts, exclusive of steel sizes, and upwards of 15,000 different non-production items. Total volume of purchases in these classifications is in the neighborhood of \$300,000,000 per year.

In seeking the reasons why Buick's purchasing department is able to get along with such a comparatively small staff, one finds four notable factors that are worthy of discussion. These are: (1) efficient organization and division of the work load; (2) development of dependable sources; (3) simplification of paper work; and (4) the co-operation of other departments.

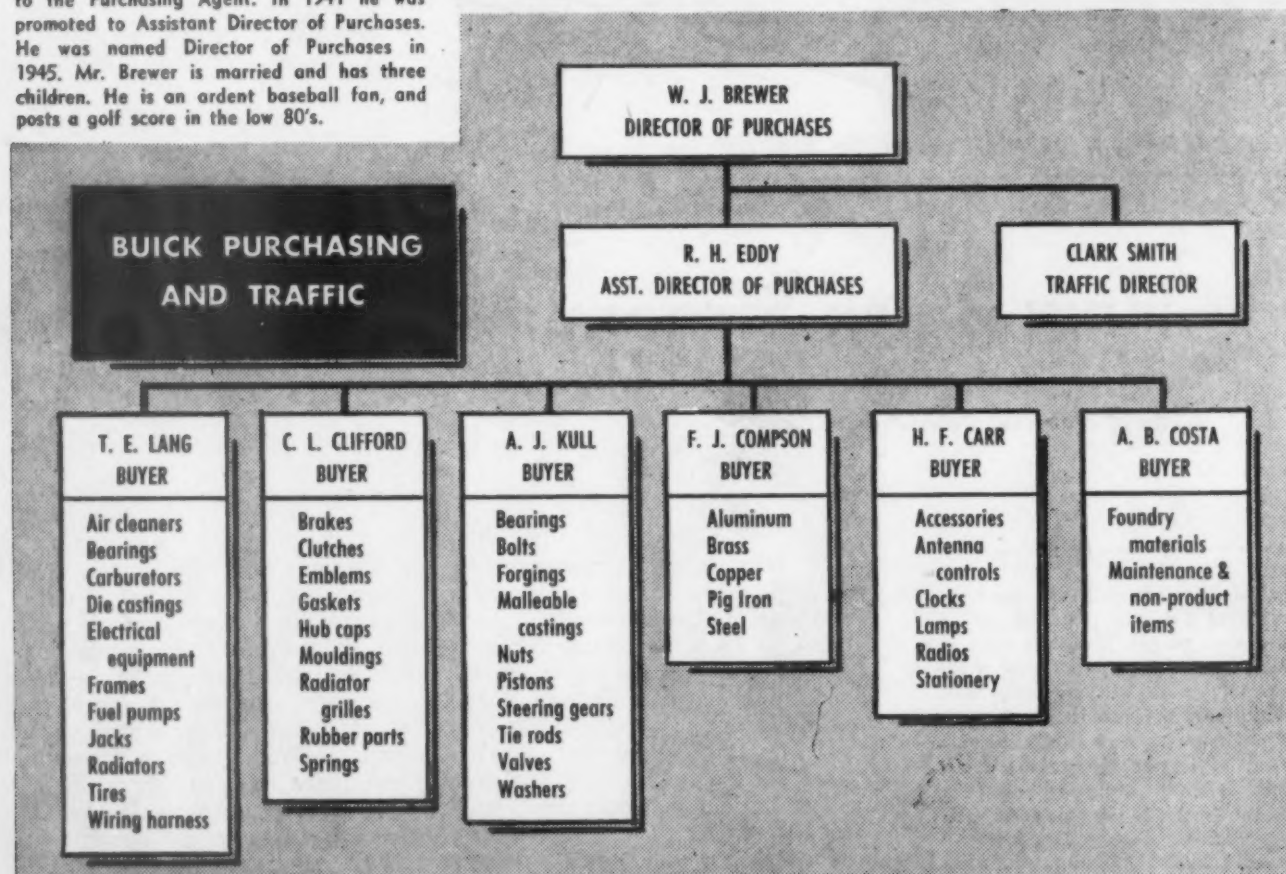
Purchasing Organization

All members of the executive personnel in the purchasing department are men who have had long experience with Buick, who have come up through the ranks, and who have been well trained for their respective duties. They know what to do, and they do it with a minimum of lost motion.

All of this might be taken for granted, of course, as it is assumed to be true of any well organized department. But it is made effective by a clean-cut division of labor and of responsibility, that permits each one to concentrate on his own particular duties and carry them through without encountering extraneous problems or interruptions due to supplementary duties.

The Director of Purchases determined matters of policy, providing a well defined framework within which the buying organization can operate. He handles the contacts with top management, and attends the many meetings required to keep the company program well coordinated, translating those decisions into terms of purchasing policy. Thus he keeps a close rein on both the direction and the performance of departmental activities in both purchasing and traffic.

The Assistant Director of Purchases is in direct contact with the buying staff and its work. He reviews all summaries of developments, purchase orders, shipping releases, production schedules, and many other phases of the paper work, and confers with the individual buyers concerning their problems.



The six buyers (and one assistant buyer) have definite commodity or product assignments, as indicated on the organization chart shown herewith. Each buyer has two or more follow-up men who are directly responsible to him—there is no general supervisor of the follow-up group.

Within each buying division, follow-up men get a copy of every purchase order and shipping release, and they post an invoice record, receiving record, and shipping reference on the back of the purchase

order, which is ruled for this purpose. These they file, according to assembly plants, in post-type loose-leaf binders. Each of them has an adding machine and does his own bookkeeping, although they may call upon clerical help from other sources if and when necessary. In case of failure on the part of regular sources to fill their requirements, they confer with their respective buyers and the latter take whatever steps may be necessary to obtain the items.

Buyers have individual offices and secretaries. The buyer of non-production items, with his assistant, three follow-up men, and five girls, are located in the factory office building where they are most read-

Dependable Sources

ily accessible to the departments they serve—general stores, master mechanic, and engineering. Buyers of production parts write up their own purchase orders in pencil, then two girls type them. These are the only purchase orders that actually originate in the purchasing department, as will be explained later.

It is an important fact that Buick has been established for a long while, and has developed an ade-

quate number of capable and dependable sources of supply. Included among these, of course, are several other divisions of General Motors, but this makes no particular difference as they are treated exactly like independent suppliers and have to bid for their share of the business on a strictly competitive basis. The real point is, that most of the suppliers have been serving Buick for many years; they are thoroughly familiar with Buick's standards, requirements, procedures and practices, and are fully equipped to supply their share of the big car manufacturer's requirements.

Prospective new suppliers are always welcome, and are given interested attention. If their qualifica-

tions merit such attention, the company may send representatives to inspect their facilities. But it is quite obvious that the number of parts manufacturers who are qualified to supply even a considerable percentage of Buick's needs is rather limited. Furthermore, it is only natural that any preference should be given to the tried and dependable suppliers unless and until they fail to meet the purchaser's requirements, or until some one else offers something better in the way of product or service than they are prepared to render. In other words, the door is open, but the supplier must demonstrate his qualifications to get in, and to stay in.

This condition makes the task of the buyers of production parts and other items that are purchased regularly, much easier than would be the case if they were constantly negotiating with untried or inadequately equipped suppliers. Consequently, less purchasing manpower is required.

Nevertheless, all available sources that are considered at all adequate are canvassed and given thorough consideration at least once each year. When preparations are being made to bring out a new model, buyers send out requests for quotations on all parts and other items regularly required. These requests go to regular suppliers and prospective suppliers alike, and all have to bid competitively for their share of the business.

When all quotations on a given item have been received, the buyer makes out a "Summary of Developments" on which he lists the names of bidders, locations, shipping points, f.o.b. terms, and remarks, together with data concerning the item, previous prices, and other information, and reviews this with the Director and Assistant Director of Purchases. The source or sources having been thus decided on, a blanket purchase order is issued and, unless subsequently cancelled, remains in effect for the model year. The quantity noted on this order is "Requirements as released", and delivery is to be made "As released".



Better Buys for Buick

is the responsibility of this purchasing team. Seated at the desk is W. J. Brewer, Director of Purchases. Standing, from left to right are Buyers A. B. Costa, T. E. Lang, C. L. Clifford, A. J. Kull, R. H. Eddy (Assistant Director of Purchasing), F. J. Compson, and H. F. Carr.

OK NEXT YEAR

BUICK 4990-F-1

PART NO. 5936253

PART NO.	5936853
DESCRIPTION	Assy., Head Lamp

P.O. NO. P-3942

BUICK MOTOR DIVISION
OF GENERAL MOTORS CORPORATION
Flint, Michigan

DATE 5-1-50 RELEASE NO 18

SOURCE Guide Lamp Division
Anderson, Indiana

GRAND TOTAL RELEASED _____ 624200

SHIP TO ^{6H} FACTORY FLINT, MICHIGAN AND/OR B.O.P. PLANTS AS INDICATED

IMPORTA

Form 1402-A1

SUMMARY OF DEVELOPMENTS

Approved

Signed

M-8-267

84

releases continue to be issued against an order there is no apparent reason or justification for renewing it.

Simplified Paper Work

Thus in the procurement of production parts alone, which is handled wholly within the purchasing department and represents a substantial part of the purchasing program, repetitive paper work is reduced to the minimum. But let's take a look at other purchases.

Buick uses seven different purchase order forms—for production parts, non-production parts and materials, assembly branches, service parts from allied sources, unfinished materials for service only, and accessories. At first glance, that may seem like a rather complicated arrangement; actually it makes for simplification of forms processing and more efficient procedure. All of the purchase order forms are basically similar, but they differ in some respects according to the requirements of the various product classifications. For example, the number and distribution of copies varies—from 5 copies of orders for production parts to 11 copies on non-production parts. It is obvious that adapting the form to the need eliminates a lot of unnecessary copies and unnecessary distribution and handling. The forms used for service items and accessories are on different colored papers to facilitate immediate identification; other purchase order forms are white.

The purchase orders—not requisitions—originate from five different sources within the organization. As a matter of fact, the only purchase orders written by the purchasing department are those for production parts (as outlined above) and for maintenance, machine repair, and expense items, bought by the non-production purchasing office in the factory office building. This requires a word of explanation.

Why Write Requisitions?

Purchase requisitions are used very sparingly at Buick. They are never seen in the general purchasing office in the administration building. Purchases of production parts are based on the car building schedule and the shipping schedule, prepared by the Materials Control Department; these schedules serve every purpose for which requisitions would normally be issued on such items. About the only use made of a requisition form is in connection

with the MRO items mentioned in the preceding paragraph.

Buick procurement men have asked themselves, "Why write purchase requisitions?" And they haven't discovered any good answer to the question. After all, an approved purchase requisition represents a company need for goods to be procured. It starts the wheels of purchasing in motion. It is not a request for an opinion as to whether the items should be bought—it is a directive, or order, to buy them. Purchasing's part is to select the sources, negotiate prices and terms, and transmit the order to the selected vendor. But since the purchase requisition actually is an order to buy, why not write it in the form of a purchase order in the be-

what their requirements are—but leaving blank the spaces for indicating sources, prices and terms. These spaces are filled in by the purchasing department after it has exercised its normal functions of selecting sources and negotiating prices and terms, just as it would have done had the purchase order form been a requisition instead. The intermediate "piece of paper" has been eliminated, and with it the necessity for recopying identical information from one form to another, and of matching up requisitions and purchase order copies in crowded files that serve no constructive purpose.

The question arises here, as in every purchasing department, of the specification of particular brands or



A palletized shipment of shock absorbers at the Flint plant of Buick Motor Division. Efficient materials handling helps keep the flow of parts in balance with production requirements.

ginning and thus eliminate one step in the procedure?

That is exactly what Buick does, and a system has been worked out by which this can be done without delegating buying authority or responsibility, or any usurpation of the proper duties of the purchasing department. The Service, Engineering, General Stores, and Master Mechanic's Departments are all authorized to write purchase orders, and they do so, indicating exactly

sources for wanted items. Here's how it is handled at Buick. In regard to perishable tools, for instance, there is a tool supervisor in the Master Mechanic's Department who regularly notifies General Stores of the items needed. (In this case, General Stores writes the actual purchase order and passes it along to the purchasing department for selection of source and negotiation of the purchase.) Part of the tool supervisor's job is to

[illegible]

run systematic competitive tests of different makes of perishable tools; if these tests prove that a tool of a given make is superior to others in actual performance on a given operation, this becomes the preferred item and he will naturally specify that tool. Similarly, Engineering has its own trained and experienced men who make tests and analyses of materials, and who, as a result, may specify their preferred source for something they want.

Other Shortcuts

safeguards in normal practice to serve the needs of identification and authorization. No vendor is likely to ship goods without an order; if he should do so, he would hardly expect to receive payment for an unauthorized delivery. Nor would the shipment be accepted at Buick unless it were accompanied by a packing slip bearing the applicable purchase order number.

Invoices are received from vendors in triplicate, one copy being unpriced. This copy is stamped with a number and sent to purchasing for verification. Purchasing, in turn, sends it to the receiving department for verification of the number of pieces received, number of rejects, if any, etc. If the shipment is OK in every respect, the invoice copy is so stamped and sent to Accounts Payable, and the bill is paid. Branch plants pay their own bills, including shipping charges.

Several other pieces of paper were recently eliminated by combining the purchase order forms and shipping releases for branch plants into one. Formerly, separate forms were used for the different plants.

Purchasing follow-up men keep records of releases and shipments, hence they know how many parts of each kind should be on hand at each plant, how many are on order, how many in transit, and how long it normally takes for parts to reach each destination. A critical shortage report is received daily. Materials Control employs a liaison man to keep in close touch with Purchasing at all times.

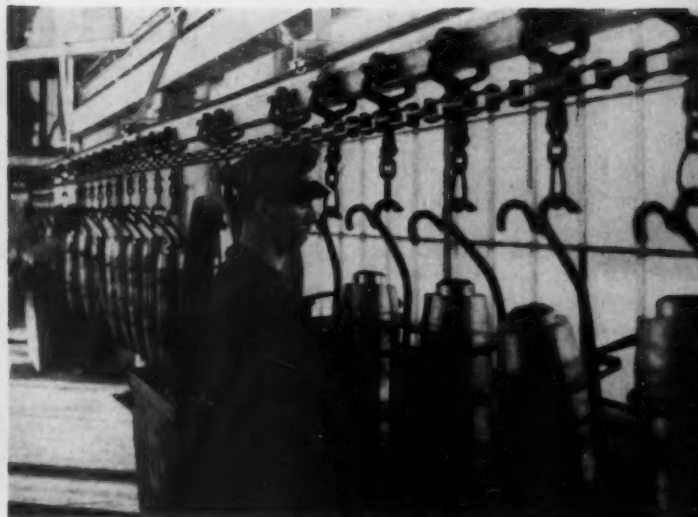
Shipping releases are issued monthly. They list the quantities to be shipped to each plant at once and in each of the following nine weeks. They also include a tentative shipping schedule for two months beyond this period. This helps suppliers in planning their own operations and in arranging to cover their raw materials requirements, but they are warned not to fabricate parts for future shipments in those months. The grand total quantity released is typed on the face of each release against a purchase order, and the instructions, printed on the back of the form, clearly state, among other things, "You are authorized to provide material for quantity shown as 'Grand Total Released' (which includes total shipments to date) against this Purchase Order. 'Grand Total Released' is our entire commitment for this part against this Purchase Order."

Purchasing Equivalents

By E. L. Cady



Low hydrogen welding can take the kinks out of today's snarled steel situation.



Overhead conveyors add flexibility to many a processing problem.

THERE'S a relatively new phrase being heard in purchasing circles nowadays. It refers to purchasing "equivalents". It's more than substitution. It can best be described as the procurement of substitute or alternative materials and services to be used or processed by modified or even drastically different methods to arrive at equivalent end results.

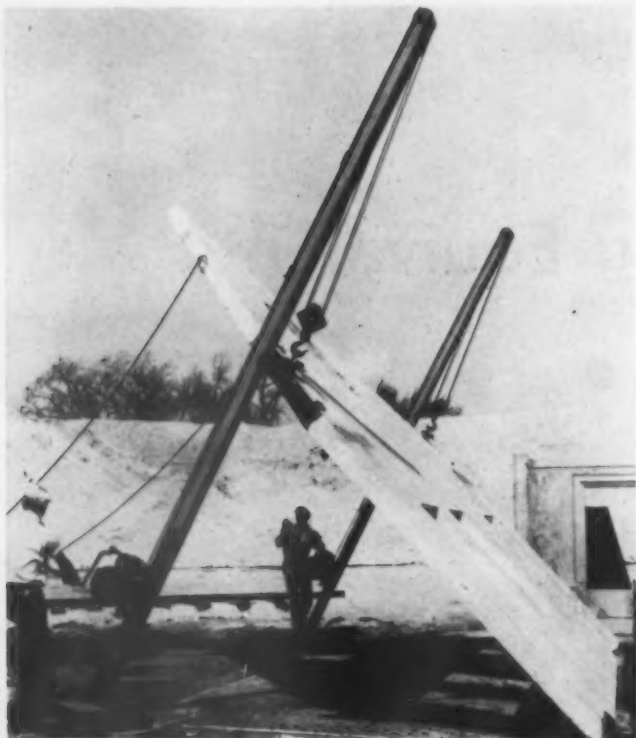
The widely recommended substitution of high carbon steels for alloy steels is an example. The high carbon steels may not be so easy to machine, may demand different welding procedures, and almost certainly will need modifications in heat treating methods. They may be more sensitive to such tiny flaws as grinding cracks, and hence may need tightening of the supervision in the grinding room and the addition of an inspection operation between grinding and heat treating, which would not be performed on the alloy steels. But

if the production management will bow to these necessities, and even try to turn them into advantages—sharpened management always being advantageous—then the purchasing engineer can turn to this sort of equivalent purchasing. The end result in the product can be equivalent to that when alloy steels are used.

Equivalent purchasing requires the highest degree of team thinking between purchasing and other company management functions, and between purchasing and suppliers' engineering, and is therefore one of the toughest tests of true purchasing engineering competence. It is of no practical value for the purchasing engineer to arrive at substitution problem solutions which his fellow management men will not support. Nor does it avail for management engineering conferences to arrive at substitute materials which the purchasing officer cannot get his sup-

pliers to ship. But if the pattern and problem of constructive cooperation is worked out, it can result in permanent improvements in management efficiency. And the substitute materials may actually prove beneficial; some of the "National Emergency Steels" with the improved machining and heat treating equipment and methods they brought into factories, proved themselves worthy of being standard peacetime items, displacing higher cost alloy steels formerly specified.

A steel fabricating plant which needed a new building is a pertinent example. If times had been normal, the purchasing agent would have bought prefabricated trusses; the builders would have used rivets and bolts, with some welding; all welds would have been designed for loading in torsion or shear rather than in tension; all other procedures would have been normal. But these



★
Precast building wall
made with light-
weight aggregates
saves construction
trouble.

in the fact that most of the men who were to do the welding were not trained welders, did not know what was "easy" or "difficult", but were willing to obey orders. And purchasing engineering collaborated closely with the sales engineers of the welding rod vendors to make sure that instructions were clear, complete, and workable.

Purchasing engineering also had to find precast concrete roof slabs and other structural members obtainable in this market. But the building went up. And it has withstood snow loads accompanied by gale winds and sub-zero temperatures without the least sign of trouble.

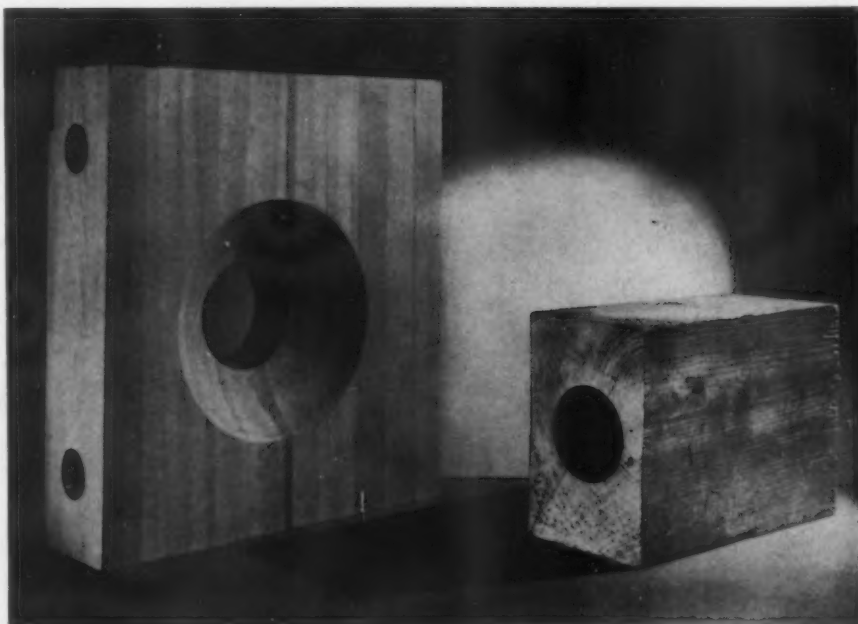
It is far more important to the purchase engineer to know that low hydrogen rods exist than to study this extreme example of what they have been made to do. Low hydrogen rods can weld sulphur-bearing free machining steels, thus permitting the making of simple pieces which will be welded into complex assemblies of these high production

materials could not be obtained.

Lying about the plant yard, waiting to be sold as scrap, were rusty old rail road rails, rerolled rails, odds and ends of structural steel shapes of various metallurgical analyses, pieces of non-specification steels from abroad. Their cross sections would not match well enough for bolting and riveting even if the bolts and rivets could be obtained. The match would not even be close enough to allow fit-ups for getting all the welds loaded in torsion or shear. The welding itself would be a severe test of welding skill since some of the steels were hardenable, some non-hardenable, some highly weldable and some poorly weldable. Highly skilled welding labor needed for such conditions was unavailable.

Construction men used jig saw puzzle tactics to figure out a pattern by which the pieces could be welded end to end to obtain a frame work which would be adequate in strength.

Purchasing engineering then stepped in to find a welding method by which the job could be done. It was found in the little-publicized but rapidly developing low hydrogen electric welding rod. This rod is the safest to use when joining steels of varying or unknown analyses. It avoids the hazard of under-bead hydrogen-cracking when welding hardenable steels, little or no preheating is needed when welding thick sec-



Wood plus modern adhesives produces a material resource adaptable to many needs.

tions; the weld metal has high tensile strength and very high impact strength, especially when the welds are subjected to sub-zero temperatures or extremes of heat and cold. The welding technique is more difficult than that of "conventional" rods, a technique similar to that used with stainless steel rods being used. But here an advantage was found

steels. These rods can solve thousands of machine building and maintenance problems. But putting them to work is going to require cooperative studies by management men.

Precast concrete units are another resource which barely got its start during the last war. To use them successfully it is necessary to consider two factors. First, that the re-

sultant structure has the strength properties of concrete and not of metal weldments or castings and that its cross sections must be designed accordingly. Second, that portland cement is merely a glue that sticks concrete aggregates together, that the aggregates are most important in establishing the nature of the concrete, and that aggregates are available for light weight, high strength, sound and vibration absorption, moisture resistance, and so on. Add the availability of coatings which will proof concrete against oil and other damaging penetrations, consider the fact that any good carpenter or foundry pattern maker can make the necessary forms, and useful thinking about precast concrete will be under way.

Purchasing engineers have specified precast concrete units for bucket elevator boots, machine bases, vats, bearing supports for belt conveyor idlers, structural beams. Precast machine bases have been complete with scrap receiving vaults and with recesses for holding tools. Nearly all

many another has done, he turned to the offset process only to find that its price was not substantially lower.

At a conference of the sales managers and engineers involved he obtained an agreement that he might aim at an end result product that would do the job a sales manual is supposed to do. Then he began a purchasing engineering inquiry into the sources of offset costs and what his own company could do to eliminate those sources.

Line drawings, he learned, could be substituted for those "indispensable" photographs which are so difficult to reproduce well by offset. By a change in page size the offset house can work to 6 up instead of 4 up. He set himself a budget goal of \$75.00. In three weeks he has worked the price down to \$82.50 without threatening the profit structures of the offset house pricing methods. He is whittling away at that remaining \$7.50. The intended saving of \$150.00 from the letter press quotations cannot begin to pay for the value of the time he and his

come out with a business basis which should be mutually profitable for years to come. But it is improbable that he would have gotten the right kind of cooperation from his own management men if an emergency which requires equivalent purchasing practices had not existed.

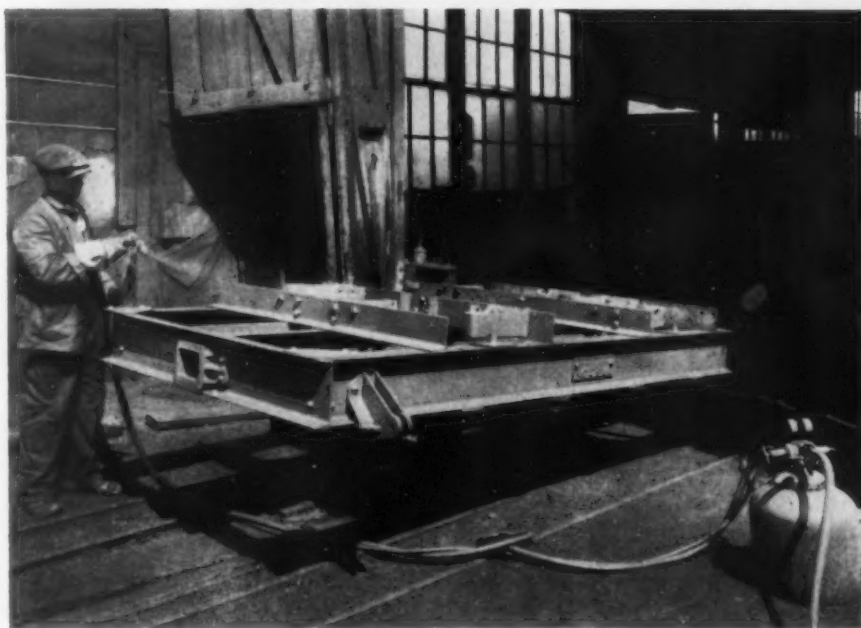
Perhaps the hardest hit by the present shortages are the companies having production lines equipped with automatic and remote controls which are limited in adaptabilities and are sensitively organized for fine specifications of the properties of raw materials. Men can be more adaptable than machines. Many a small but maneuverable batch plant is better off than its larger on-stream competitor today.

The answer of one major chemicals producer is to interview more men. One of the company's purchasing engineers has said that where he previously devoted his time to the representatives of six companies supplying a single line he now pays serious attention to the sales engineers of sixty. The company formerly preferred to deal with the largest suppliers, now it has adopted the idea that: "When it comes to vendors there are no small manufacturers."

He obtains ideas by this method. The admixture of a desiccant enabled a hygroscopic chemical to be used where a non-hygroscopic one was unobtainable. The use of modern adhesives enabled small pieces of scrap lumber to be combined into serviceable columns for the support of an overhead conveyor, and the conveyor in turn adds maneuverability to what was formerly a rigidly controlled production line. New types of catalysts have been found.

Equivalent purchasing means "end result" purchasing, with such factors as flexibility, adaptability and maneuverability existing between the end result and the available supplies. With the exception of a few rigidly adjusted processes, there is not a production process or type of equipment which is not more adaptable now than it was just a few years back. Salt bath heat treating, modern industrial trucks, portable and semi-portable machines of all kinds, are just a few examples of present day process maneuverabilities.

The thinking has to be done from desired end results back to the available supplies. The flexibility has to exist in the minds of management men. Purchasing engineering is its principal resource.



Many a materials problem can be solved by applying the right protective coatings.

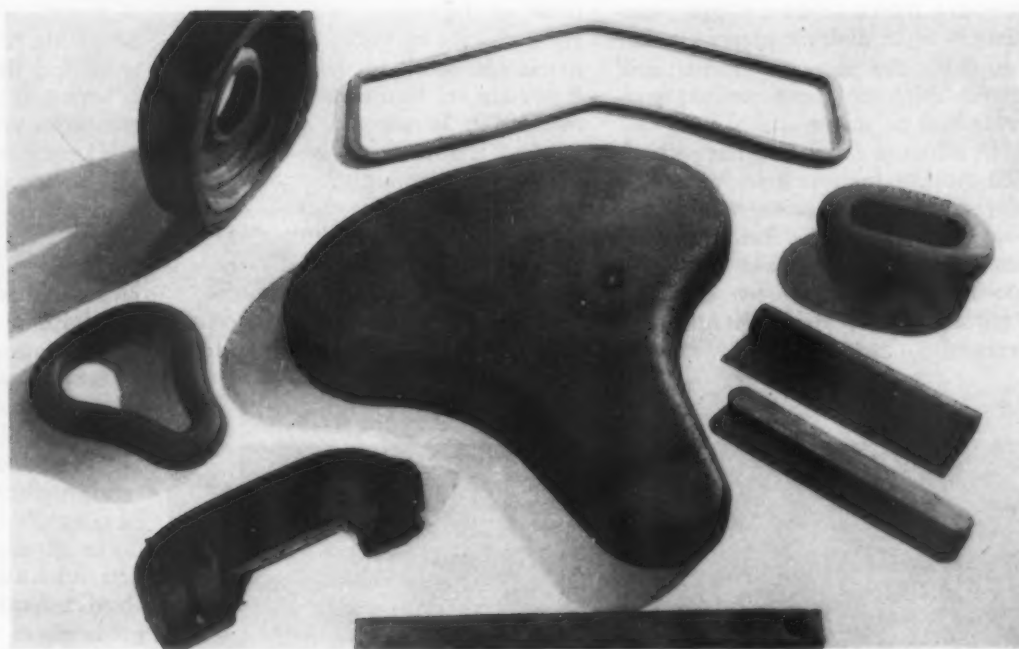
of this would be done in steel if steel were available. But right now ingenuity may be in greater supply than steel.

A purchasing engineer who buys printing recently had a budget of \$150.00 for some new sales manuals. The lowest letter press quotation he received was \$225.00. He determined to lick the problem. As

engineers have spent on the effort. But he knows that under present conditions a great many new manuals must be created and that his company can ill afford them at present printing prices. Several offset houses are working with him on that basis. He gives them fact-filled questions to answer, and they give him factual answers. Both sides will

How to Buy Cellular Rubber

A wide variety of items and parts are molded of cellular rubber to the required shape. Shown in this photograph around the motorcycle seat (clockwise, starting at 6 o'clock) are: a heater insulation gasket, automobile arm rest, athletic supporter cushion, household appliance motor mount, cowl vent gasket, knee cushion for operating lever, refrigeration tubing, and washing machine vibration damper.



By John J. Corrigan

The Sponge Rubber Products Co.
Shelton, Conn.

CELLULAR rubber is a technical product. Whether it is purchased in the form of ordinary stock items such as sheet, cord, tube, strip, and die-cut shapes, or in the form of specially molded parts, these technical considerations of compression and recovery, performance under varying temperatures, water absorption properties, swelling upon contact with or exposure to different sorts of chemical agents, insulating value, buoyancy, etc., must be taken into account to assure a satisfactory and economical purchase.

Cellular rubber is available in a

variety of compositions based on the physical and chemical properties required; also in variations of physical structure, such as open or closed cell, with or without mechanical rubber skin covering. These variations determine the performance of the material; they also affect its cost. For the more common applications, there are established specifications, which most rubber manufacturers have on file. This simplifies ordering, for it becomes necessary only to state the specification number, instead of transcribing the entire specification.

There are other cases, however, in which extra requirements are called for, or on which no established specifications may apply. In such case, there is available to the purchaser expert advice from the technical staffs of the rubber manufacturers. Especially in the case of custom molded forms, the intimate

cooperation of the purchasing agent and his engineers with the supplier's technicians is essential before a sound purchase can be made.

The important point is that end use determines the material to be specified. It follows that the more the supplier knows about the proposed application, the more helpful he can be, and the better will be the purchase, in terms both of satisfactory performance and of cost.

The accompanying check list includes the principal points on which a supplier needs to be informed in order to make a sensible quotation. Where cellular rubber is to be used as a component of an end product, rather than an end product in itself, the material's role in the end product should further be indicated by blueprints or by full and detailed dimensional data.

Observance of this check list will make for better buying. Much time

can be saved for both the purchaser and the supplier, in that lengthy correspondence can be avoided, involving many questions answerable at the time that the original request for quotation is made.

Even more important, the purchasing agent and his company may

be spared the experience of "buying a fifty dollar saddle for a ten dollar horse". For instance, cellular silicone rubber withstands extremes of temperature, but it is costly. It might be required for a particular application, and be well worth the cost. On the other hand, perhaps

the temperature range specifications of your application can be satisfactorily met by other, and less expensive stocks. Unless your supplier knows what the use is to be, you can never be sure that you have made the most sensible and advantageous purchase.

A CHECK LIST FOR PURCHASING CELLULAR RUBBER PARTS

• Here's what the supplier needs to know

... to quote intelligently

... to provide a satisfactory part

... to save you money

1. What is the end use of the part?
2. What portion of the part will be enclosed, and what portion will be exposed, in the end use application?
3. Is mechanical rubber skin covering required? What is its purpose? Is it necessary that this mechanical rubber skin cover the entire surface or only a part of it? (Blueprints should indicate exactly where the applied skin is necessary. Applied skin on all surfaces is more expensive and more difficult to apply than it is on only a part of the surface.)
4. How much weight is to be placed on the part, and what are the limits that the part is to compress is psi necessary to compress to 75% of original thickness? At what temperatures, and for how long? What percent of recovery is required, and in what time?
5. At what temperatures must the part perform? Is exposure to these temperatures constant or intermittent? If intermittent, explain in detail.
6. Will cracks, small tears, and small depressions be allowed if they do not impair the use of the part? Is a cloth-marked or rough surface objectionable? (Elimination of surface appearance defects adds to the cost of the part, but may not affect its performance or usefulness.)
7. If color is desired, is uniformity of color an important factor?
8. Is closed cell material required or will open cell material serve the intended purpose? (Open cell, or "sponge" rubber, is the variety that is in most general use for cushioning, gasket sealing, vibration damping, and similar purposes. Closed cell rubber

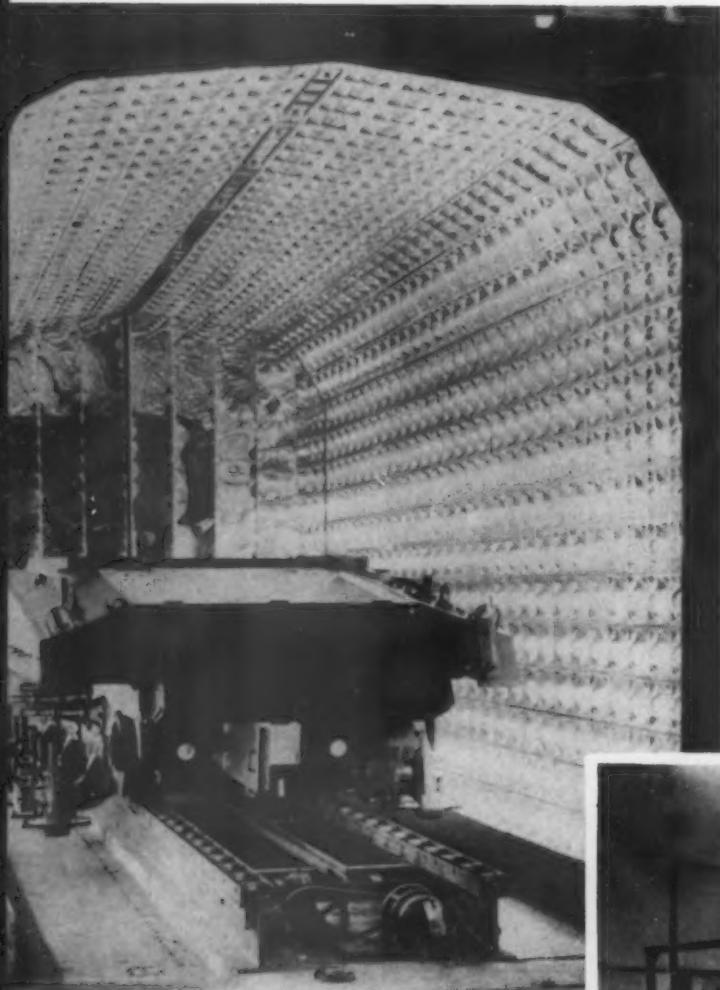
has the additional property of almost zero water absorption, and is specified where this quality is a factor to be considered. The hard version of closed cell rubber has exceptional features of insulation and buoyancy. Where open cell material answers the purpose, it is recommended as being less expensive, with better compression set properties and requiring less liberal tolerances.)

9. Where closed cell sheets are needed, are these for cutting into smaller pieces? What is the smallest closed cell sheet acceptable?
10. Is this the first time that cellular rubber has been considered for the part? What type of material was previously used, and in what ways has it proved unsatisfactory?
11. Is the part to be bonded to metal or to any other type material? (If so, specifications on any such material should be furnished, with advice as to whether deviation from the specification with other material, as good or better, will be allowed. If special material is to be furnished by the purchaser, waste allowance of at least 10% is required by supplier.)
12. Need the cellular rubber be resistant to oil, aromatic fuel, or any other type fuel, chemical, or solvent action? ("Resistant" means the degree of swell allowable when the rubber comes in contact with such agents.) What degree of swell is allowable?
13. If part is to be exposed to acid, acid fumes, bases or basic fumes, state percent of concentration and period of exposure anticipated.
14. What dimensional tolerances are allowable? (Tolerances applicable to metals and mechanical rubber do not apply to cellular rubber.)

INFRARED LAMPS AT WORK

By Carl E. Egeler

Lamp Department
General Electric Company
Nela Park



INFRARED FOR DEFENSE

Armored vehicles get a fast, effective paint-drying treatment at a New York arsenal.

INCREASING acceptance of infrared lamps as the energy source for a wide variety of baking, heating, and drying operations in industry is understandable for a number of reasons:

1. Infrared radiation does a quality job, makes close process control possible.

2. It transfers heat rapidly. There is no warm-up period, and no "stand-by" expense while not being used.

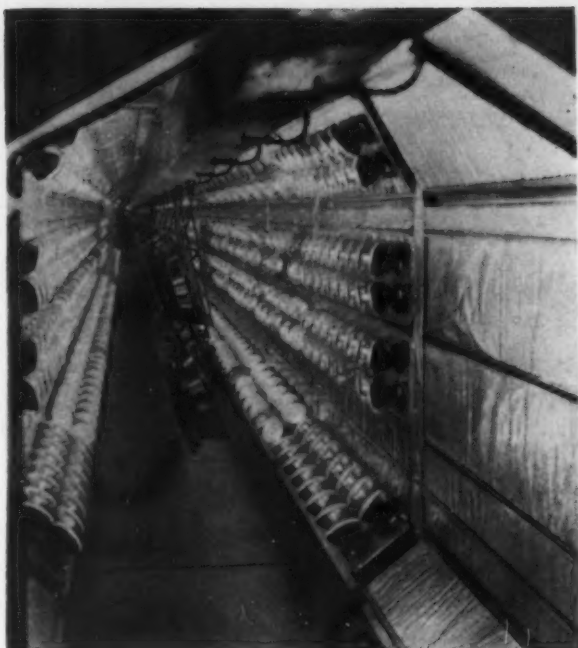
3. It operates efficiently, heating the product, not the air.

4. It is adaptable to conveyORIZED

INFRARED IN A BOX FACTORY

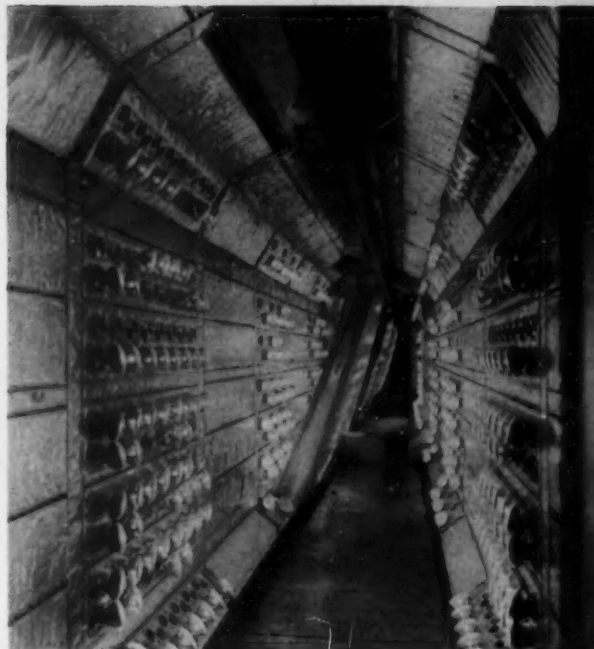
At General Box Company, New Orleans, unpainted wood sections are fed into a hopper. Five minutes later they have been painted and dried, ready for assembly.





INFRARED ON THE ASSEMBLY LINE

Baking paint on wheels and engine hood stampings at a Lincoln-Mercury assembly plant. Infra-red ovens saved 19,000 square feet of floor space compared with other types of drying equipment.



production methods, to large or small products and products of unusual shapes. The versatility of the infrared lamps makes it practical for applications ranging all the way from the drying of washed potatoes to the curing of the finish on giant military tanks.

5. Compared with conventional heating methods, it saves valuable factory space.

6. It saves strategic materials. The lamps are mostly glass; their filaments use a minimum of critical metal in producing heat; when reflector lamps are used, no auxiliary

metal reflectors are required.

7. It produces uniform results, which means fewer rejects.

8. Maintenance is simple. Average laboratory life of the lamps is in excess of 5,000 hours, and lamps are easily replaced.

9. It offers economy in initial costs, installation, upkeep, and operation.

The infrared lamp is a relatively new development, being introduced commercially at about the same time as the fluorescent lamp. In this short span of time, an amazing number of practical applications have been de-

veloped, and the list is growing daily. One manufacturer of oven equipment reports more than 6,000 customers, using infrared lamp ovens in processing several hundred different types of products. Among the applications are:

Baking (1) prime and finish coats of paint; (2) insulation on electrical windings.

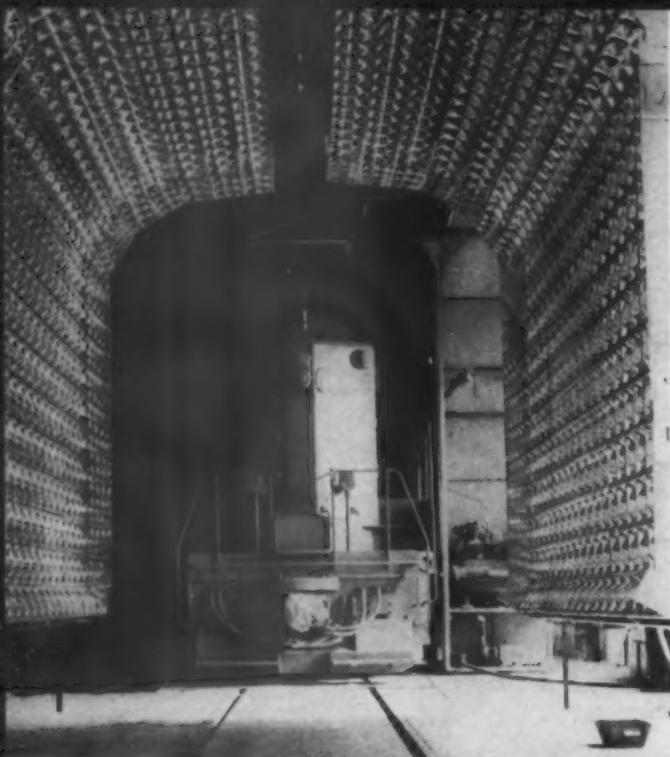
Drying (1) metal products after baths; (2) a variety of special coatings on metal, wood, fabrics, paper, leather, and plastics; (3) wet electrical equipment.

Dehydrating (1) textiles — yarns

INFRARED IN THE LAUNDRY

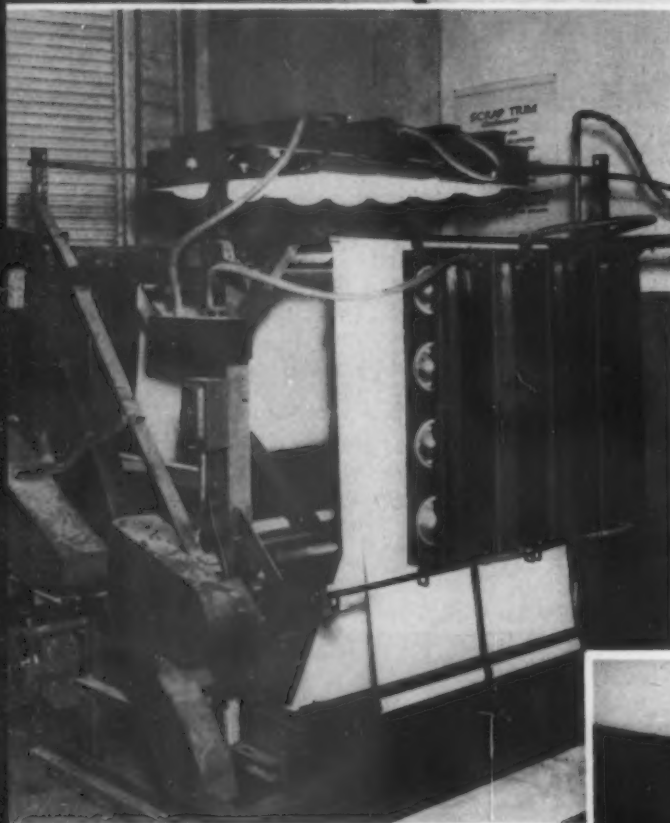
Production went up 40% when infrared lamps were installed on the ironer in New York's Commodore Hotel. At Peerless Carpet Cleaning Works, room size rugs are dry and fluffy after 6 to 14 minutes of infrared lamp treatment.





INFRARED ON THE RAILS

King size infrared lamp drying oven accommodates a diesel locomotive.



INFRARED SAVES HOURS AND MANPOWER

Continuous application of cement to rubber is made possible by fast drying of cement. One operator, plus infrared lamps, matches production formerly requiring three people working two full shifts.

INFRARED FOR WINTER CONSTRUCTION

Through two severe winters, infrared lamps were used to maintain 55 degree temperatures during the setting of concrete at the Mt. Morris dam project, Downsville, N. Y. The method was found to be effective and economical, flexible, easy to apply on sections 110 feet above the ground, and less susceptible to heat loss by air convection.

as well as woven fabrics; (2) paper; (3) leather.

Degreasing metal products.

Preheating (1) metal products to secure shrink fit; (2) fibre and metal to make shearing and punching easier; (3) glass closures prior to filling, to prevent breakage; (4) syrups, grease, oil, paint in containers, to facilitate flow; (5) plastics prior to forming; (6) metal prior to welding.

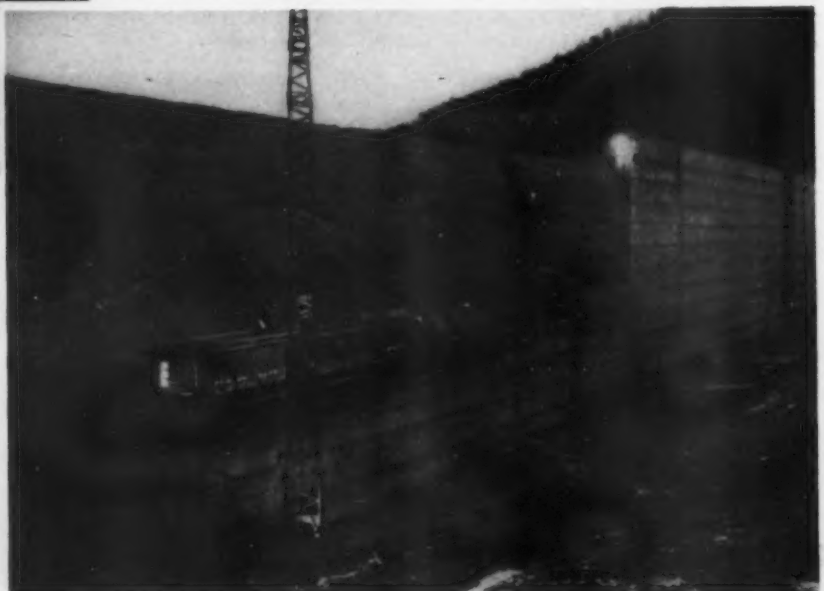
Miscellaneous. (1) Soldering. (2) Cooking foods. (3) Carbonizing woolen materials. (4) Comfort heating. (5) Sanforizing.

While this is all very recent history, there's nothing very new about infrared energy. About 50% of the sun's radiation which reaches the



INFRARED ON THE FARM

Lamps provide warmth for new-born pigs, keep them from crowding against sow's body where they may be crushed to death when she rolls over. Infrared lamps are also used in chicken and sheep brooding, and to prevent mold and rot in potato storage after washing.



earth is infrared energy; the rest is visible and ultraviolet. The cave men unknowingly used the principles of infrared heating to dry their meats and vegetables by placing them in the sun.

What is new about infrared energy is an appreciation of the ease and merits of its application and the development of modern equipment to bring it under control. Infrared lamps are now available in wattages ranging from 125 to 1,000. The most widely used range is from 125 to 375 watts, and the self-contained reflector lamps are becoming increasingly popular.

The reason that infrared lamps produce heat instantaneously is that the filament, being of very small

mass, heats immediately and radiates the energy from the filament directly to the product. By absorption, this energy is quickly converted to heat within the product itself.

Materials which are good absorbers of infrared radiation and which are good conductors of heat are particularly well adapted to treatment by infrared lamps. Mirrorlike surfaces are likely to reflect a large part of the radiation, while matte or rough surfaces may absorb it. Consequently, major consideration must be given to the absorption properties of the material to be processed so that the effectiveness of the installation may be determined before the equipment is actually installed.

The proper design of an infrared

application involves many factors. It is therefore desirable, in most cases, to consult a reputable and experienced oven manufacturer who will design a "prescription" oven best adapted to furnish the heating cycle required for the product.

There are many similar ovens, but no standardized designs are advocated because of the many variables involved, such as the type and color of finish; size, shape, and mass of material processed; and mechanical limitations as to size, weight, and shape of oven to be used. All of these and other pertinent factors must be considered in the design of a particular installation.

Thus, complete laboratory testing facilities for individual product analysis are necessary to properly design an infrared oven, since the fundamental data should be supplemented by time and temperature determinations to complete a satisfactory design. Oven manufacturers have established such testing laboratories for analysis of their customers' particular products.

Low initial cost, as well as low operating cost for many installations, particularly where the heating cycle is intermittent and it is possible to turn off the energy when not needed, commend infrared processes to progressive plant managements. In other applications, where power cost may be somewhat higher than for an equivalent amount of heat supplied by a cheap fuel, lower overall costs may still be obtained. This is due to such factors as interest on the investment, low direct labor for operation, low maintenance, flexibility, space saving, and the like. Good engineering of infrared ovens is resulting in energy costs comparable to other heating because of better utilization of the generated heat.

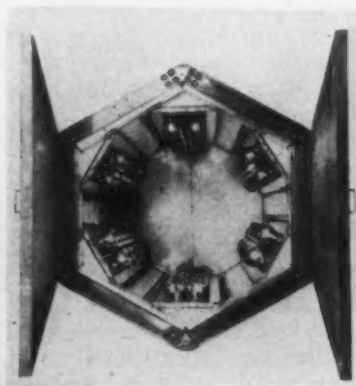
Control of product temperature—another advantage of infrared lamp heating—is simple because the radiant energy output of an incandescent lamp depends directly on the amount of wattage that is put into the lamp. It is easy to control the output either by using lamps of different wattages or by varying the voltage input, or both.

With infrared lamps it is possible to supply high intensities of radiation so that the rate of energy transfer is sufficient to obtain the optimum results in the process.



INFRARED SAVES THE GAME

Ten days of rain left the University of California's Memorial Stadium gridiron soggy and unplayable on the eve of the big game with Stanford. After other methods had failed, two infrared portable dryer units were put to work the night before the game, moved from spot to spot every forty minutes, putting the entire playing field in condition in time for the kick-off.



INFRARED SAVES FLOOR SPACE

Tower-type oven handles large quantities of parts for baking of protective coatings with a minimum of floor space required. Lamp maintenance is readily handled from outside the oven. Well-type oven permits parts to be stacked on racks for treatment, develops temperatures up to 550 degrees F.

British Socialism is on the Decline



By Col. Willard F. Rockwell

Chairman of the Board
Rockwell Manufacturing Co.
Pittsburgh

Abstract of an address at the 20th Annual Midwinter Conference, Public Utility Buyers Group, N.A.P.A., Pittsburgh, Feb. 19, 1951

AS a result of my visits to Western Europe and my constant contact with businessmen over there, I believe it is safe to predict that both communism and socialism are on the wane.

In England, socialism came to power through the efforts of the Fabians—wealthy liberalists and intellectual leaders who have been preaching socialism for more than half a century. Knowing that socialism had been discredited by the failure of various forms of socialism as far back as there are any records in history, they did not describe their movement as socialistic until they had a large following.

When the long struggle of World War II ended, the war-weary workers and the men released from military duty were entranced by the possibilities of adopting an easier life, a higher scale of living, and the wiping out of class distinctions. Labor leaders who had risen to power through these promises were now at the head of the government, but during their rise they had acquired more experience and broader knowledge of world affairs.

At the height of its power, the labor government nationalized railways, coal, and public utilities. They raised wages a little and they raised prices a lot. Their own rules for giving managerial powers to the

working classes resulted in a breakdown of discipline, so that the ultimate consumer, whether he was a working man or a cabinet minister found prices higher and quality of product or services rendered was lower. The labor leaders were constantly reminded of their promises of more pay for less work; but, with their great national responsibilities, they realized that England could not possibly compete with Western Europe unless higher wages were accompanied by greater production.

Productivity in the coal industry has not increased proportionately to the vast investments in mechanization. Absenteeism is a serious problem. Many miners refuse to work the fourth and fifth days of a week, when their *per diem* pay is sharply reduced by higher taxes.

After the war, one of the British labor ministers described England as "an island built on a bed of coal and surrounded by fish," and predicted that the Englishman would never lack for food and heat. That very winter, there was a desperate shortage of both. At the present time, England is again very short of coal.

Many of the labor leaders who have risen from the ranks are highly intelligent and have acquired education and wide experience at home and abroad. They cannot deny that

nationalization has retarded England's recovery and threatens its future. Some of them admit that they did not want to continue nationalization into the steel industry, but they say that they were elected to office on that program and therefore they must carry on.

Unlike the communists, who confiscate any private property they want, the British socialists intended to pay for everything which they nationalized. They issued bonds bearing a low rate of interest in the exact amount of the market prices of the securities taken from private investors. On the surface, this appeared to be fair. As a matter of fact, the threat of nationalization had reduced the price of shares until market prices were driven far below actual values. The bonds given in exchange for these lowered values have shown a great decline, and there is neither a promise nor a prospect that they will ever be paid off in sound money.

The more intelligent labor leaders realize that they cannot make a success in the nationalized steel industry if they use the same bungling bureaucratic methods they employed in the earlier nationalized industries. They are very much worried.

As a comment on the honesty of top labor leaders, it should be pointed out that nationalization of steel is planned in such a way that the industry can be unscrambled and returned to private ownership. The steelmasters fear that the longer the labor party remains in office, the harder it will be to "denationalize" the industry. No one knows how the coal mining industry could be unscrambled at this stage, but

(Please turn to page 318)

Purchasing Looks at Management

By H. F. Jones

E. I. du Pont de Nemours & Co.,
President, National Association of Purchasing Agents.

Abstract of an address at the 20th Annual Midwinter Conference,
Public Utility Buyers Group, N.A.P.A., Pittsburgh, Feb. 19, 1951.

WE Purchasing Agents rightly consider ourselves an essential element of modern business management. Everyone connected with business realizes that without material with which to work, of the right quality, in the right quantity, at the right time, and at the right price, no company can stay in business very long. We also feel that the Purchasing Department is the place for management to obtain not materials alone, but also a wide variety of services including counsel and suggestions based on our intimate contact with markets and industrial conditions outside of our own organizations. In other words, we are members of the management team.

But the fact is that we can be of very little service to management if we do not know the problems of management. We would indeed be failing our responsibility if we tried to offer counsel on a management problem without knowing the background of the problem or the corollary problems arising from it. Management's problems are many and diverse, but there is one so important that it overrides all others.

This problem is the trend of thought and action toward socialism in government.

For the sake of perspective, let us glance for a moment at the background of this trend. We have had a socialistic movement operating in the United States for about 50 years. In 1901 Eugene V. Debs or-

ganized what we know now as the Socialist Party. Debs was the party's first Presidential candidate. The Socialist Party is plainly labeled. Its candidates campaign on a platform of socialism. The American people reject it. Basically, they prefer the American system of individual initiative and enterprise.

This, then, is the fate of the Socialist Party. But it isn't the fate of socialism.

In the expansion of governmental agencies caused by the heavy gov-

ernment spending since the early '30s, a large number of socialistically inclined theorists found their way into key positions. They were careful to avoid labeling any of their schemes as frankly socialistic. Instead, they conjured up attractive names to disguise their aims. Their workings were labeled "planned economy". And certainly the American people at that time were ripe for anything labeled "a plan".

No one likes to quarrel with the idea of planning, because some planning is needed in anything that is going to be handled in a rational manner. But planning, as meant by the Socialists-in-planned-economy-clothing, was to take us down a different road than we had ever traveled before. When they used the word "planning," they really meant "control."

A "planned economy" does not mean that every business is owned

N.A.P.A. President "Hack" Jones with leaders of the Public Utility Buyers Group at Pittsburgh Conference. Seated: C. F. Wilson (Dallas), H. F. Jones, R. V. Stephens (Tulsa). Standing: J. R. Millikan (Dallas), J. R. Carmichael (Atlanta), G. H. Cole (Birmingham).



and operated by the State. The latter-day socialists have learned that this is not necessary to achieve their goals. Here is the summation of their goal, as I see it:

1. Ownership by the government of all businesses involving electric power, transportation, coal, steel, credit, and control of foreign trade, both import and export, plus all insurance functions. Those, for the most part, are "bigs."

2. The remaining private business enterprises to be subject to complete control by the Federal government.

3. The government to assume complete responsibility for continuous full-scale, or near full-scale, operation of our entire economic system.

4. Assurance by the government that everyone will receive pensions, unemployment compensation, old-age benefits, and medical care.

This, then, is the real plan. It is being put forth behind a smoke screen called "security", to get public acceptance of a course that is exactly the opposite of what people are led to believe.

Government in Business

Let us look at some examples of this drift toward socialism. Government has moved into the banking business in a big way. It operates direct lending agencies with outstanding loans in excess of \$6 billion. It maintains for this purpose 171 offices all over the country with a total of more than 27,000 employees.

In electric power generation and distribution, we have moved toward government ownership with a rush. During the last 15 years, the government has spent more than \$3 billion on public power projects—nearly one-fourth of the total fixed assets of all the privately owned power companies. The total capacity of private power companies is about 45 million kilowatts. Present plans call for government-owned plants generating 41 million kilowatts. This puts government in competition with private business in this field to the tune of almost 50%.

Socialized medicine is on the agenda: false teeth, false hair, and all. Of course it isn't called socialized medicine; it is called "health insurance". Government has been in and out of the railroad and mining business several times when it has taken over these industries during strikes. Some day, on one of those ventures into government op-

eration, these industries may be taken over and never returned.

We hear plenty of talk nowadays about the government going into the steel business because private enterprise has failed to provide enough capacity. Six months ago a Senate committee had steel up for a thorough going-over. The charge then—they were too big; now, the charge—they aren't big enough.

Dangerous in normal times, the socialist-minded bureaucrat is doubly dangerous in times of national emergency. He thrives on crisis; he uses it every time to gain his own ends. No decent man objects to proper controls and other measures for the common defense when they are required. But it is unforgivable at such times to confuse these needs with other, concealed objectives. It is next door to treason. The very moment when we most need unity and common purpose is always seized upon by these doctrinaires to put across the coup that the American people would reject in the calm reflection of normal times.

Another aspect of this socialistic drive for absolute control is the current campaign against bigness in industry. This campaign is going ahead on the proposition that bigness, *ipso facto*, is badness.

Campaign Against Bigness

The campaign against bigness gets its motive power from the endless stream of suits filed by the Justice Department against American businesses under the antitrust laws. Nobody objects to prosecuting a deliberate and cold-blooded violator of our laws. Furthermore, any enlightened businessman will agree that maintenance of competition is an excellent and healthful thing for industry and the nation as a whole.

But the antitrust laws are necessarily broad and interpretations of them vary over the years. In view of this, it should seem highly improbable that all these American businessmen are deliberate and cold-blooded law violators. It would seem more likely that most of them, even those whose cases cannot stand up well in court under all the legal technicalities, are still not motivated by bad faith. More probably they have simply been mistaken in their interpretation of how these laws applied to their businesses. This is a far different thing from deliberately wanting to break the law.

One should not lightly impugn the motives of those whose responsibility it is to enforce our laws. But considering the sudden eruption of these suits in such enormous volume, many of them concerned with business habits and practices that have been accepted for decades, one cannot help wonder. And one cannot help being shocked at the use to which these suits are put in public utterances. It is a natural question whether this inquisition of business and industry is entirely free of strange purposes.

Du Pont, the largest corporation in the chemical field, has been referred to countless times as a "monopoly"—a word that has become synonymous with "big." Du Pont accounts for about 8% of what the Department of Commerce describes as the chemical and allied products industry. The company has had no more than 8% of the chemical business for a long, long time, despite the fact that it has grown rapidly in recent years. In other words, the company has grown, but the chemical industry has grown, too, and just as fast.

Does Du Pont's 8% of the chemical business constitute a monopoly? Does this percentage give it exclusive control of the supply of chemicals and enable it to raise the price to whatever it pleases?

The fact is that mere "bigness" is the real sin in socialist eyes. And I defy you to explain why—except for this thought: Is big, healthy, free industry something that a Socialist can admire? It is not; its very existence is a reproach to everything he teaches.

Small Business is Growing

Another thing we have been hearing a lot about is the thesis that big business is swallowing up little business. Let's look at the facts. These figures come from the Department of Commerce.

In 1948 there were 3,100 "bigs," those companies having more than 1,000 employees. Total businesses, according to the department, numbered 3,966,800. Thus, there is one big for every 1,278 smalls.

There are more small firms today, in proportion to big ones, than there were at the turn of the century, and the smaller ones are growing. Each group among the firms with employees numbering from one to 100 experienced an increase in percentage of total manufacturing employment from 1945 to 1948. Firms employing 100 to 499

(Please turn to page 322)

Steel Industry Raises its Sights

By Earl L. Shaner

Editor-in-Chief, Steel, Cleveland

Address at the 20th Annual Midwinter Conference, Public Utility
Buyers Group, N.A.P.A., Pittsburgh, February 19, 1951.



A YEAR ago I ventured the belief that demand for steel in 1951 would fall somewhere between 72 and 78 million tons and that production would be sufficient to meet this demand without difficulty. As you all know, production in 1950 actually mounted to the record-breaking total of 96.7 million net tons of ingots and it fell far short of satisfying demand.

The discrepancy between estimate and fact is so pronounced that we can afford to spend a few minutes in examining its cause. My estimate on demand for steel was based upon the carefully weighed opinions of well-qualified experts in each of the important steel consuming groups. In some of these industries — notably construction and containers—the estimates of the experts as to steel requirements turned out to be quite accurate. In most of the others, the experts undershot the mark by substantial margins. A good case in point was the automobile industry, which is the largest single steel consuming group. Last February the smartest men in motordom were pretty well in agreement that 5.6 million cars and trucks would roll off the industry's assembly lines in 1950. Actually production soared to the fantastic total of 8.2 million units. Here is an error in top-flight judgment of 46%.

Why were the estimates so far off? The Korean factor is only a partial explanation. The fact is that

rather consistent underestimates of demand have been the rule rather than the exception for several years.

One reason is that during much of the postwar period we have had little, if any, opportunity to determine by actual experience the true volume of normal demand. We have operated our industries through a series of crises. Every time that production has been on the point of catching up with demand, a strike or some other man-created crisis has intervened to throw the economy back into a state of scarcity. On the one occasion when a pretty fair run of uninterrupted steel production in 1949 all but caught up with demand, the speed with which huge backlogs on mill order books melted put a decided chill upon steelmakers' enthusiasm for expansion. Similar scares in many other branches of industry revived the instinct for caution.

Preoccupation with repeated crises probably caused management of industry to underrate the significance of certain changes that have occurred in the nation since World War II which will have an important bearing upon future demand. When the Korean situation threw a new and unexpected burden upon the already hard-pressed facilities of American industry, some astute corporation executives decided to re-examine the entire economic panorama something along these lines: "We are to be under terrific pressure to increase capac-

ity for defense purposes. This we will do, but we can do it with much more enthusiasm and certainly with more conviction as to its validity if we can find that such expansion will also yield benefits to the nation in peacetime."

In re-studying the nation's growth they came upon some startling facts. They found that the long accepted belief that productivity (output per man hour) increases at a rate of 2% per year is outmoded. Right now the increase for all industry is 2.2% annually, and for the metal-working industries it is 2.7% per year. They also found that World War II upset the estimates of experts as to growth of population. The birth rate rose to the point where population increased 14.4% from 1940 to 1950. At the same time, the increase in the number of families was 27.7%. In fact, 40% of today's families have been formed since 1940.

This phenomenal increase in family units has tremendous significance to the nation's economy. The family is the key factor in the market for most foods and services. Equally important is the extent to which the buying power of families has increased. In 1941 only 1,564,000 families had incomes of over \$5000 annually before taxes; today there are 6,240,000 families in that bracket. In 1941, only 5,703,000 families had incomes over \$3000 annually before taxes; today the total is 21,320,000 families.

Closer analysis of these and other significant statistics has caused many industrialists to raise their sights on the potentials of future demand. Public utilities are doing it. Manufacturers are doing it. Steel-makers are doing it. With this hint of a new approach to planning for the future, let us now look at the prospects for production, demand and price in steel for the short term of 1951.

Under conditions now existing and likely to continue beyond 1951, production will be limited only by capacity and by restrictions such as strikes, material shortages, weather, etc. Under the most favorable conditions, production will hover around 100% of capacity. Inasmuch as capacity is increasing steadily, it

is likely that weekly steel production will register new all-high records frequently throughout the year.

Right now steel ingot capacity is slightly above 100 million net tons annually. The steel industry has cast aside all restraints on expansion and is pushing new facilities to the limit—in some cases, almost to the point of recklessness. As of this moment, plans for new steel capacity call for a total approaching 120,000,000 net tons of steel ingots by the end of 1952. This is a tremendous undertaking. It tops the expansion for World War II by a wide margin. Whereas expansion for the late war involved many millions of government money, the present expansion is financed largely by private funds.

Whether or not we fully realize it, our preponderance of private ownership of productive facilities is one of our most valuable national assets.

In considering our potential for production we should not ignore the contributions of technological progress in steel. Almost every week witnesses some new development which cuts costs, improves quality or saves critical materials.

Discussion of demand under present circumstances is somewhat academic. Every pound of steel that can be produced here or imported will be grabbed by eager consumers. The government will channel sufficient steel to the military and to supporting industries and services such as railroads, and whatever is

(Please turn to page 318)

Not Enough Copper for All

By Dr. Joseph Zimmerman

Editor-in-Chief
Daily Metal Reporter
New York

THERE is not enough copper to take care of the needs of civilian industry and of the Government's defense and stockpiling programs. Domestic production of copper, including the scrap intake, has been averaging 90,000 tons a month, and the net imports have averaged 45,000 tons, so that there has been a recurrent monthly supply of 135,000 tons.

As against this monthly supply, industry has been consuming about 130,000 tons and an additional 20,000 tons went to the Government for stockpiling. That was before the war in Korea. In view of the national defense program, it is estimated that the Government will need an additional 15,000 tons each month, merely as a starter. That would bring the civilian and Government requirements to 165,000 tons a month, as against a supply of 135,000 tons, resulting in a shortage of 30,000 tons a month.

Producers' stocks, which at the beginning of 1950 amounted to 116,000 tons, are now down to about 49,000 tons; and fabricators had to draw on their own stocks to the extent of about 65,000 tons last year, to make up the difference between what they consumed and

what they got from the producers.

Since the domestic mines are already working at capacity, there is little prospect of increasing the supply from that source. Nor are the imports likely to be larger, because the rest of the world is also in need of copper, so much so that some European countries are willing to pay a higher price than the 24½ cents a pound that now prevails in the United States. Consequently, foreign copper producers find it more profitable to sell their metal to other markets—especially since the United States still imposes an import duty of 2 cents a pound on foreign copper. Under present market conditions, the import duty should be suspended.

Since the Government's needs must be met first, stated Dr. Zimmerman, the National Production Authority has stepped into the picture and has ordered a cut-back in civilian copper consumption by 15 to 20 per cent, and has also prohibited the use of copper in about 300 nonessential commodities. These cutbacks and prohibited uses, when in full effect, may make available to the Government about 50,000 tons of copper each month. Whether the 50,000 tons will be



Dr. Zimmerman (right) and C. F. Ogden of Detroit Edison Company see little to cheer about in the copper situation.

sufficient to meet the Government's various needs is not known, chiefly because the defense planners in Washington, themselves, don't seem to know exactly how much the Government will need. Thus far defense orders are insufficient to offset the cutbacks in civilian consumption. Unless there is a speeding up in the placing of defense orders, some fabricating plants may be compelled to curtail their operations and lay off some of their skilled workers, whom it will be hard to replace when the defense orders do come through.

The Increasing Influence of Materials on Equipment Design

By R. C. Bergvall

Engineering Manager, Industrial Products
Westinghouse Electric Corp.



SUMMARY: Progress in engineering and product design depends largely on the development of new materials having special or superior properties that can be adapted to commercial uses. In such developments, the manufacturer frequently plays the dual role of researcher and potential user; then a whole industry benefits. Examples cited: foam insulation, finishing materials, magnetic steel, high temperature alloys. Present emphasis is toward lighter weight materials.

MATERIALS are the building blocks from which the equipment used in modern industry is fabricated to engineering design. The important part played by materials is little understood by the general public even though about one-half of the year-by-year improvements in products can be attributed to materials and the other half to skillful engineering.

Advantages vs. Limitations

Before we consider a few specific materials that have come into use in recent years in our industry, it would be well to start with a new material that is now in the pilot plant development phase — *Insulfoam*. As originally conceived in the research laboratory, it started as a liquid that required the application of external heat to make it foam. When turned over to our materials engineers for commercial development, they found that a liquid that would foam at room temperature was necessary, as it was impractical to try to fill the wall of a house with a material that required the application of heat to start the reaction.

The early publicity resulting from this research work brought in hundreds of suggestions for its use, ranging from the filling of walls in a house to foaming insulation in refrigerator cabinets. Here odor is a problem that has to be cleared up, but it is a very desirable application. In our own Mansfield Works, we use seven carloads of light weight insulation per day, and it would be desirable to replace this with a few barrels of liquid that could be foamed as used. The use of this material for insulating hot water heaters may be the earliest application, as here the odor problem is less serious.

Undoubtedly, many purchasing agents will think of new uses for this product if it can be brought down in cost and made convenient to apply. *Insulfoam* appears to be a desirable addition to our list of materials, but at the moment its commercial position is uncertain.

Not All Romance

As we continue to improve our equipment, the materials problem becomes greater and greater and becomes paramount in the case of using atomic energy as a source of power. A trip through a modern research laboratory can be very disappointing to people who do not have a close understanding of where materials fit into modern development programs. They expect to see glamorous new things under way that popular writers lead them to expect in a research laboratory. However, it should be appreciated that so much of the effort in a modern research laboratory is centered on unspectacular materials work without the finished product being seen.

To keep this discussion specific, I will briefly cover a few examples of modern materials work that have taken an important part in improving the quality and cost of equipment. The use of new insulations, magnetic materials, and high temperature metals for gas turbines will be covered as these are key items used in building equipment that your group purchases from our industry.

My Corporation's business essentially consists of buying about 8000 different materials from outside

Address at the 20th Annual Midwinter Conference of the Public Utility Buyers Group, N.A.P.A., Pittsburgh, February 20, 1951.



D. E. Winslow and Russ Wenz of Pittsburgh explain to A. C. Bull of Chicago (center) how new highway plan will cut 30 minutes off travel time between Pittsburgh and Mt. Lebanon.



New England utility companies were represented by S. J. Kennedy (Springfield), Tom Varley (Cambridge), W. J. Killoran and A. W. Sullivan (Boston).

suppliers and fabricating them into equipment. There are also some additional materials that we develop and manufacture ourselves. One example is the enamelled copper wire used in making motors, transformers, controls, and hundreds of other electrical items. The success of all of this equipment is dependent upon the uniformity of a few thousandths of an inch of this enamel insulation.

How we developed this enamel wire illustrates the modern materials approach. We decided to discard the use of natural gums and resins from which the early wire enamels were made and concentrated on using basic synthetic chemicals derived from coal, oil, and electrochemical processes.

Natural materials like shellac can be influenced by the food that the shellac bug had for breakfast, whereas the basic synthetic chemicals are always uniform—they have an individual identity and can be tested and accepted or rejected before blending—thus assuring the initial step in controlling the final product. Then if they are blended under

repetitively controlled conditions of time, temperature, and pressure, we can be sure of obtaining an enamel of uniform quality. This can be done with the same exactness ten years from now as it is done today.

Dealing With Solvents

Another important insulation in electrical equipment is the varnish used for impregnating and moisture-proofing windings, whether they be a small airborne transformer or a large turbine generator coil. The ordinary varnishes used for this purpose contain about 50% solvents—similar to the turpentine in your home painting efforts—and these solvents must be driven out before the varnish will harden. This results in air bubbles throughout the structure that lower the voltage breakdown, impede the flow of heat from the windings, and provide paths for moisture to enter.

Over the years, much effort has been expended on these standard type varnishes, and for most purposes they are very satisfactory. However, at present there are strong

tendencies toward a new type varnish where the solvent is *Styrene* and does not have to evaporate, but enters into a chemical reaction with the materials dissolved in it. As a result, we obtain a clear, solid resin without any air bubbles.

This development was first used for radar type transformers during the war, where voltages up to 20,000 had to be developed in a unit smaller than your fist, yet one that was subjected to extreme moisture conditions in the tropics. Since the war, this principle has been applied to windings for the largest turbine generators and is the basis for our new thermalastic insulation.

Risks and Rewards

Magnetic steel is also an important constituent of electrical equipment. In steel of the type that has been used since the beginning of the electrical industry, the ability to carry magnetism was about equal in all three directions. By research on composition and rolling techniques, it was found possible to take away magnetic properties from two directions and concentrate them longitudinally where they are the most effective. This steel is called *Hipersil*, and was first originated in our research laboratory. It was developed into a commercial product in collaboration with a steel company.

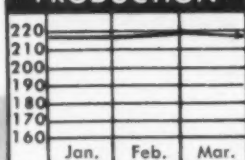
Transformers made with this steel are lighter, use less copper and less steel. As this type of steel is more expensive, the transformers made from it were not cheaper, and we were frequently asked, "What does the user gain from this development?" For the short pull, the gains were lighter and smaller units could be handled and stored more easily. Larger transformers could be mounted on a single pole without the expense of a second pole or platform structure. For the long pull, with conditions as at present where materials are extremely short, more transformers can be made from the same available copper and iron.

In order to get a development of this kind under way, great risks had to be taken. A factory had to be completely re-equipped in order to use enough volume of this new iron for a steel mill to get its price down. But unless such risks are taken, we would continue to sit and wonder which came first, the chicken or the egg.

Gas turbines represent a new type
(Please turn to page 320)

Where We Stand

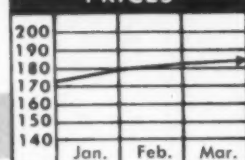
PRODUCTION



	190			BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH YEAR	
	180								
	170								
	160	Jan.	Feb.	Mar.					
Industrial Production Index.....	1935-1939=100	218				220	180	— 0.9	+21.1
Steel Production (Weekly).....	000 net tons	2,001				1,969	1,712	+ 1.6	+16.1
Electric Power Production (Weekly).....	mil KWH	6,795				7,099	5,937	— 4.3	+14.5
Bituminous Coal Production (Weekly).....	000 net tons	11,120				9,530	3,181	+16.7	+249.6*
Auto, Truck & Bus Output (Weekly).....	units	170,023				142,943	116,869	+18.9	+45.5
Petroleum Output (Weekly).....	000 bbls.	6,047				5,861	4,827	+ 3.2	+25.2

*calculated from strike period

PRICES



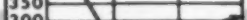
170				BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH YEAR	
160									
150									
140	Jan.	Feb.	Mar.						

All Commodities (BLS).....	1926=100	183.4	183.4	152.6	0	+20.2
Farm Products.....	1926=100	203.0	203.4	159.8	— 0.2	+27.0
Metals & Metal Products.....	1926=100	189.3	188.7	168.3	+ 0.3	+12.0
Building Materials.....	1926=100	227.2	226.7	194.3	+ 0.2	+16.9
Steel Billets (Pittsburgh).....	net ton	\$56.00	\$56.00	\$53.00	0	+ 5.7
Steel Scrap, heavy melting, Pitts.....	ton	44.00	44.00	32.25	0	+36.4
Copper, electrolytic.....	lb.	.241½	.241½	.181½	0	+32.4
Rubber (rib-smoked sheets).....	lb.	.70	.74	.201¾	— 5.4	+247.9
Wheat, No. 2.....	bu.	2.721¼	2.83	2.56¾	— 3.8	+ 5.9

TRADE

(Dept. Store Sales)



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN	
					MONTH	YEAR
	Jan.	Feb.	Mar.			
Dept. Stores Sales Index (Fed. Res.).....1935-39=100	304	233	253	+30.4	+20.1	
Commercial Failures (Dun & Bradstreet) ...no.	153	159	221	— 3.8	—30.8	
Freight Carloadings.....cars	785,867	651,124	574,449	+20.6	+36.8	

FINANCE

Stock Prices (Standard & Poor's).....1926=100	174.3	175.4	136.5	— 0.6	+27.7
Bank Clearings (New York).....mil \$	10,403	7,736	7,795	+34.5	+34.7
Federal Reserve Credit.....mil \$	23,652	23,260	18,264	+ 1.2	+29.5
Currency in Circulation.....mil \$	27,167	27,125	27,023	+ 0.2	+ 0.5

MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

Value of Manufacturers' Sales Seasonally Adjusted (Millions of Dollars)

All Manufacturing	15,756
Durable goods	6,516
Iron and Steel	1,704
Nonferrous metals	406
Electrical machinery	676
General machinery (exc. elec.)	1,028
Motor vehicles & equipment	994
Transportation equipment (exc. motor vehicles)	319
Lumber and timber products	443
Furniture & finished lumber products	309
Stone, clay & glass products	358
Nondurable goods	9,240
Food and kindred products	2,496
Beverages	439
Tobacco products	248
Textile-mill products	965
Apparel	743
Leather and products	228
Paper and allied products	474
Printing and publishing	597
Chemicals and allied products	1,063
Petroleum and coal products	1,518
Rubber products	245

Book Value of Manufacturers' Inventories Seasonally Adjusted (Millions of Dollars)

All Manufacturing	28,879
Durable goods	13,413
Iron and steel	2,958
Nonferrous metals	965
Electrical machinery	1,521
General machinery (exc. elec.)	3,157
Motor vehicles & equipment	1,788
Transportation equip. (except motor vehicles)	742
Lumber and timber products	552
Furniture & finished lumber products	584
Stone, clay & glass products	524
Nondurable goods	15,466
Food and kindred products	2,803
Beverages	986
Tobacco products	1,527
Textile-mill products	1,965
Apparel	1,241
Leather and products	509
Paper and allied products	687
Printing and publishing	553
Chemicals and allied products	2,059
Petroleum and coal products	2,194
Rubber products	531

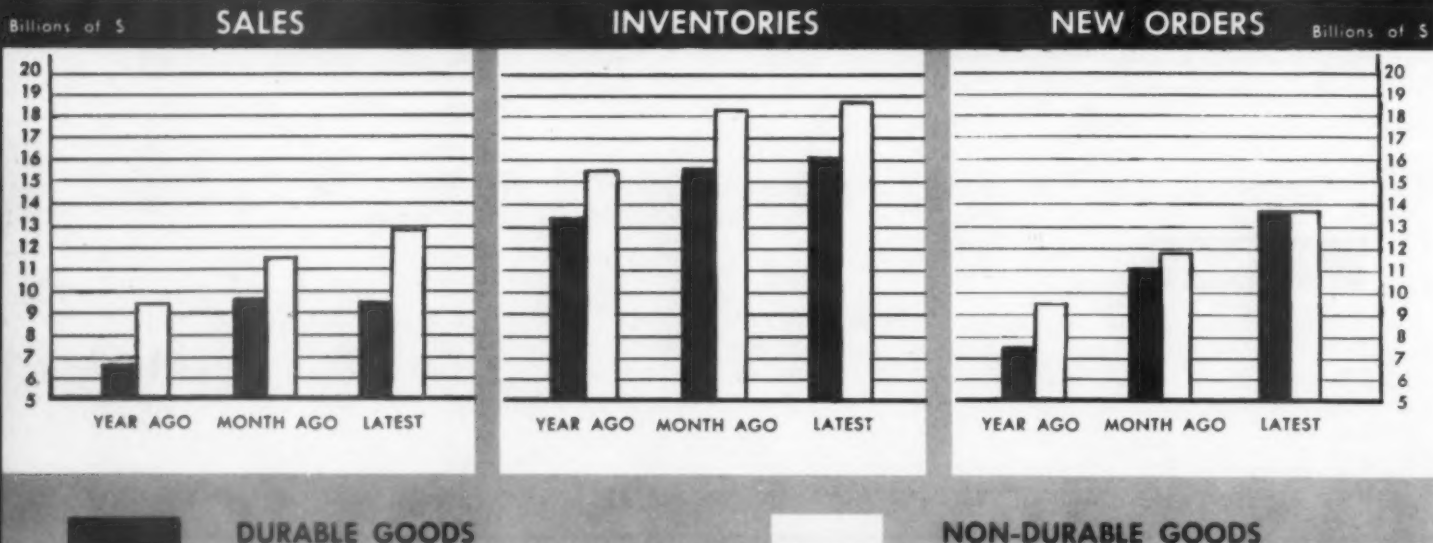
Manufacturers' New Orders (Unadjusted)

All Manufacturing	16,009
Durable Goods	6,923
Non-Durable Goods	9,086

1949	1950				1951
December	January	October	November	December	January
15,756	16,216	21,246	21,112	21,304	23,326
6,516	6,817	9,671	9,730	9,700	10,461
1,704	1,718	2,414	2,448	2,550	2,689
406	440	599	610	627	585
676	738	1,131	1,108	1,058	1,254
1,028	1,085	1,512	1,544	1,560	1,863
994	1,220	1,547	1,501	1,504	1,648
319	284	401	402	422	454
443	359	673	683	656	506
309	290	437	449	405	450
358	380	542	566	512	585
9,240	9,399	11,574	11,382	11,605	12,866
2,496	2,637	2,972	2,949	3,198	3,590
439	390	434	390	466	483
248	271	271	282	268	324
965	926	1,293	1,290	1,279	1,354
743	804	976	839	814	991
228	242	324	287	269	350
474	485	656	668	668	718
597	600	581	576	587	670
1,063	1,104	1,550	1,529	1,512	1,716
1,518	1,436	1,834	1,870	1,829	1,852
245	265	405	397	442	n.a.
28,879	29,035	31,770	33,007	34,016	34,868
13,413	13,422	14,446	15,119	15,693	16,112
2,958	2,975	3,308	3,404	3,442	3,493
965	948	971	992	1,031	982
1,521	1,524	1,666	1,751	1,872	1,939
3,157	3,124	3,368	3,519	3,670	3,784
1,788	1,771	1,935	2,111	2,135	2,218
742	730	687	754	838	931
552	585	572	583	626	629
584	607	685	729	762	787
524	522	541	550	577	598
15,466	15,614	17,324	17,887	18,322	18,757
2,803	2,861	3,113	3,190	3,300	3,424
986	998	1,095	1,145	1,146	1,167
1,527	1,514	1,706	1,717	1,718	1,682
1,965	1,988	2,616	2,768	2,834	3,034
1,241	1,282	1,575	1,647	1,829	1,792
509	522	596	608	605	649
687	704	690	699	737	780
553	595	628	651	656	683
2,059	2,032	2,187	2,267	2,316	2,364
2,194	2,161	2,162	2,180	2,146	2,094
531	524	524	564	577	n.a.
16,009	17,032	24,704	22,371	23,053	27,724
6,923	7,479	12,171	10,621	11,143	13,859
9,086	9,553	12,533	11,750	11,910	13,865

n.a. — not available

SALES, INVENTORIES AND NEW ORDERS



PRODUCT DELIVERY INFORMATION

DELIVERY times on the majority of products listed in this report show no change. But all of the comparatively few changes extend date of delivery, reflecting growing tightness in materials. The "vicious circle" is in full operation. Many manufacturers express great uncertainty as to supplies of needed production materials.

Typical comments received tell the story graphically: "With the many imponderable factors affecting the procurement of materials and their manufacture today, I don't see how it is possible for anybody to make any sensible or honest forecast." (Brushes) "We have a very difficult time giving any hard and fast shipping dates for orders we receive due to the fact that delivery of the materials which we require to fill orders is so uncertain." (Oilers, containers) "Believe estimates (of delivery by suppliers of basic products) will continue to extend till such a time that a material control program is again put into force . . . self-imposed allocation (of plastics and non-ferrous metals), needless to say, is considerably below requirements." (Safety products) "Under today's conditions it would be almost impossible for us to give you dependable delivery information. Our deliveries are very extended now, and they are changing from day to day." (Machine tools) "Any information we might give you would be valueless since our picture changes from day to day. All of our products are on allocation, and the allocations change constantly depending on steel supply, which as you know is uncertain." (Tubular goods).

Delivery time indicated in this report is based on information received from several manufacturers of identical products, and the time shown is the range of delivery time reported by them. It should be borne in mind that a DO rating is not assurance of prompt delivery, nor an immediate source of supply.

VALVES: Through error in the preparation of last month's report an inaccurate and misleading picture of the supply situation in valves was given. We regret this mistake and any wrong impression it may have created. New data on delivery times for valves is given in this report. A general view of the situation is presented in the statement of one manufacturer that standard catalog material is represented by an industry backlog of about six months, and in that company's case, about eight months. Another producer states: "In the case of cast steel valves there are instances when as many as six months or more may be required to produce and deliver a valve of special design."

	STANDARD Products	SPECIAL Products	D.O. Orders		STANDARD Products	SPECIAL Products	D.O. Orders
ALLOYS, STEEL				CASTERS			
HR alloy bars	21 wks	21 wks	21 wks	Casters and Wheels	2 wks		1 wk
CD alloy bars	26 wks	26 wks	26 wks				
Carbon tube rounds	30 wks	30 wks	30 wks	CASTINGS			
BALL BEARINGS				Iron	9 wks		
Bearings	12-17 wks	18-25 wks		Aluminum	9 wks		
BOXES				CHAIN			
Folding (no printing)		6 wks	3 wks	Hardware	7 wks	7 wks	Prompt
Folding — printed	4 wks	6 wks	3 wks	Tire	3 wks	3 wks	Prompt
Bakery boxes	4 wks	6 wks	3 wks	Roller	Stk to 17 wks	13-17 wks	Stk to 6 wks
Folding cartons		6 wks	4 wks	Steel	10 to 12 wks		8 to 10 wks
Candy boxes	4 wks	8 wks	4 wks	CONTAINERS			
Metal Boxes (Spare parts)	3 wks		2 wks	Containers (Can Co.)	3-4 wks	9 wks	
BRASS				Stampings (Can Co.)	6 wks	9 wks	2-3 wks
Sheet	Indefinite		6-11 wks	Misc. (Can Co.)	2-4 wks		3-4 wks
Rod	Indefinite		6-11 wks	Wood cleated fibre shooks		4 wks	4 wks
Wire	Indefinite		6-11 wks	Food pails, wire handles	4 wks	6 wks	3 wks
BRUSHES				Wooden boxes		6 wks	4 wks
Industrial floor brushes	5 wks		3 wks	Wooden box shooks		6 wks	4 wks
BUSHINGS				Corrugated cans	16-20 wks		7-9 wks
Bronze	22 wks			Cylindrical Paper Tubes & Containers		3-4 wks	
				CRANES			
				Traveling lift	38-40 wks	28-30 wks	28-30 wks

PRODUCT DELIVERY INFORMATION continued

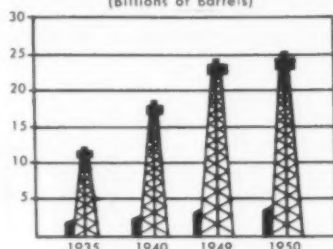
	STANDARD Products	SPECIAL Products	D.O. Orders
DIE CASTINGS			
Zinc		9 wks	4 wks
Aluminum		9 wks	4 wks
Tools, Dies, etc.		18 wks	9 wks
ELECTRICAL			
Motors	9-26 wks	17 wks	4 wks
Rigid Conduit	30 wks		4 wks
ABC Cable (BX)	39 wks	6 wks	4 wks
Loomwire	17 wks		4 wks
Bldg. wire	26 wks	22 wks	6 wks
Outlet boxes and connectors	22 wks		4 wks
ENGINES			
Single cyl. gas. engines	20-30 wks	25-35 wks	15-20 wks
FASTENERS			
Rivets, tubular	8 wks	10 wks	6 wks
Rivets, split	4 wks	6 wks	4 wks
Washers	3 wks	3 wks	2 wks
Lockwashers	2 wks	9 wks	2 wks
Self-locking nuts	4-6 wks	12-20 wks	
Bolts and screws	24-26 wks		
Machine screw nuts	24-32 wks		
FIBRE PRODUCTS			
Vulcanized, .010-3/32"	26 wks	34 wks	13 wks
Phenol fibre	8-10 wks	10 wks	6 wks
FIRE PROTECTION			
Methyl Chloride	1 wk	2 wks	1 wk
Sulphur Dioxide	1 wk	1 wk	1 wk
Dry Chemical Extinguishers	3 wks	5-9 wks	2 wks
FITTINGS			
Welding Fittings	Stk. to 17 wks	22 wks	Stk. to 17 wks
Flanges	Stk. to 17 wks	22 wks	Stk. to 17 wks
FORGINGS			
Large	6-17 wks	12-26 wks	
FOUNDRY			
Riddles	2 wks	3 wks	2 wks
Sieves, Flour	3 wks	6-8 wks	2-5 wks
GEARS			
CI & CS cut & cast tooth	9 wks		7 wks
HOISTS			
Heavy Lift	20-24 wks	20-24 wks	20-24 wks
Hoists	Stk. to 13 wks	Stk. to 13 wks	Stk. to 13 wks
MACHINE TOOLS			
Machine tools	44 wks	56 wks	36 wks
Grinders	9 wks	17 wks	4 wks
PIPE			
Wood lined pipe	3-6 wks		4 wks
Saran lined pipe	6 wks		4 wks
Saran tubing	Stock	4-6 wks	
Saran fittings	Stock	4-6 wks	
PIPE, STAINLESS			
S S and Monel pipe	13-wks		6 wks
S S and Monel fittings	13 wks		6 wks
PIPING, FABRICATED			
Fabricated	13 wks	26 wks	
Up to 500 tons		4 wks	Preference
Up to 300 tons		75 tons per mo	Preference
PULLEYS			
Cast iron	12 wks		9 wks
Welded steel	8 wks		6 wks

	STANDARD Products	SPECIAL Products	D.O. Orders
PUMPS			
Single stage 10" d. & below	13 wks	22 wks	13 wks
12" discharge-16"	18 wks	27 wks	18 wks
18" discharge and above	27 wks	36 wks	22 wks
Multi-stage standard	18 wks	31 wks	18 wks
Special, multi and vertical	52 wks	65 wks	52 wks
Turbine type	4-6 wks	10-12 wks	2-3 wks
Centrifugal	8-10 wks	12-16 wks	4-5 wks
RUBBER PRODUCTS			
Cellular rubber	4 wks	6 wks	2 wks
Silicone rubber	6 wks	8 wks	4 wks
Foam latex rubber	9 wks	12 wks	4 wks
Rubberized Hair, Wood	6 wks	8 wks	3 wks
SAWS			
Hack saws	4-17 wks	4-26 wks	2-9 wks
Gas chain saws	3 wks	9 wks	2-3 wks
SCREW MACHINE PRODUCTS			
Screw Machine parts	13 wks		
SPRINGS			
Springs	13 wks	8-10 wks	6-8 wks
Cold rolled spring steel	17 wks		17 wks
SPROCKETS			
Sprockets	Stk to 9 wks	9 wks	Stk to 5 wks
Silent chain	Stk to 9 wks	9 wks	Stk to 6 wks
Woodruff keys	Stock	9 wks	Stk to 9 wks
STEEL			
Bars and billets	15-26 wks		
Plates and sheets	15-21 wks		
Nails	13 wks	13 wks	7 wks
Fence	13 wks	13 wks	7 wks
Barb wire	13 wks	13 wks	7 wks
Steel posts	13 wks	13 wks	7 wks
TOOLS			
Portable electric	3 wks	17 wks	2-3 wks
Flex. shaft equipment	6 wks	26 wks	5-6 wks
Hand measuring	4-17 wks	4-26 wks	2-9 wks
Precision instruments	4-17 wks	4-26 wks	2-9 wks
Dial gages	4-17 wks	4-26 wks	2-9 wks
Pliers	26 wks		17 wks
Wrenches	26 wks		17 wks
Taps and dies	Stk to 4 wks	4-6 wks	4-6 wks
TRUCKS			
Fork	12 wks	16 wks	8 wks
Elec. lift trucks	12 wks	16 wks	8 wks
Hand lift	4 wks	10 wks	3 wks
Hand trucks	2 wks		1 wk
Trailers	10 wks		6 wks
Ind. wheels	2 wks	13 wks	6 wks
TIRES AND TUBES			
Industrial	2 wks	4 wks	2 wks
TUBING			
Welded steel	13 wks		9 wks
Welded Stainless	26 wks		9 wks
VALVES			
Brass valves	9-24 wks		
Iron valves	9-36 wks	(according to size)	
Cast steel valves	15-36 wks		
Stainless steel valves	15-36 wks	dependent on availability of materials	
WIRE PRODUCTS			
Music spring wire	8 wks	12 wks	6 wks
M.B. spring wire	26 wks		6 wks
H.C. rope wire			9 wks
Brush wire	9 wks	13 wks	6 wks
Industrial wire cloth	4 wks	9-10 wks	9 wks
Fabricated WC products		10 wks	6 wks
WIRE ROPE & CABLES			
Wire rope	2 wks	11 wks	13 wks
Elec. wire and cable	4 wks	13 wks	13 wks
Aircraft cord	4 wks	9 wks	4-9 wks
Aircraft cable wire	13 wks	22 wks	9 wks

STRAWS IN THE TRADE WIND

● Proved reserves of crude oil and natural gas liquids as of December 31, 1950, were at an all-time high of 29,536,061,000 barrels, according to a joint report of the American Petroleum Institute and the American Gas Association. The total increase of liquid hydrocarbon reserves over 1949 was 1,157,560,000 barrels. Production in 1950 amounted to 2,171,187,000 barrels, a rise of 153,840,000 barrels over 1949. Proved recoverable natural gas reserves at the end of the year were 185.6 trillion cubic feet, an increase of 5.2 trillion

U.S. CRUDE OIL RESERVES
(Billions of Barrels)



cubic feet over estimated reserves of 180.4 trillion cubic feet a year earlier. These reserves are the highest on record, and the gain over a year ago was registered despite a record production of 6.89 tril-

lion cubic feet of natural gas during 1950. In 1949 production of natural gas was 6.24 trillion cubic feet.

● Month of largest steel shipments so far is January, 1951, American Iron and Steel Institute figures show. The 6,904,688-ton total exceeded that of December, 1950 by nearly 500,000 tons, and topped the previous record, made in October, 1950, by 400,000 tons. These were increases of 7% and 6% respectively, which were greater than the percentage rise in ingot output. January shipments were featured by large increases in plates and structural shapes. The products were shipped in large quantities for use in railroad and industrial equipment.

● The first shipment of Venezuelan iron ore to be used by United States steel mills was expected to arrive at Sparrows Point, Maryland, on March 21. The ore was intended for the Bethlehem Steel Company. Production of iron ore in Venezuela will be rapidly increased to meet demands of new steel plants to be erected on the Delaware River. United States Steel's new mill near Morrisville, Pa., will use only Venezuelan ore eventually.

● United States imports hit a new record high in January. Figures from the Bureau of the Census show that the total for the month — \$1,022,300,000 — topped the December figure by \$199,100,000, and the October figure, previously the highest on record, by \$141,200,000. Exports declined from \$1,063,200,000 in December to \$972,300,000.

● An average increase of 2.4% in freight rates was granted to the nation's railroads recently by the Interstate Commerce Commission. Under the decision, freight forwarders and water carriers are also permitted to increase their rates. Eastern railroads may increase their rates by 4%. However, between the east and other parts of the country; between points in the west; and between points in the southern territory, rates may be increased only 2%. Eastern railroads were said to be in

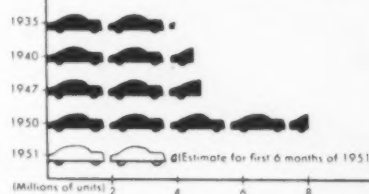
greater need of increased earnings than in other parts of the country. The total boost in rates is expected to be about \$200,000,000. The railroads had previously asked for a rise of 6%. A typical reaction to the I.C.C. move was that of the Pennsylvania Railroad, which declared that the increase was inadequate to meet increased costs which the railroads have had to bear and are bearing on everything they use in producing service.

● General Motors Corporation's net profits and sales in 1950 far surpassed those ever recorded by any privately owned industrial firm. GM earned \$834,044,039 on a sales volume of \$7,531,086,846. The company eclipsed its own record, set in 1949 when it had profits of \$656,434,232 on sales of \$5,700,835,141. Last year's profits were more than 100% higher than the next highest corporation, and exceeded the aggregate net income of 125 Class I railroads in the United States by \$43,000,000.

● The output of the American private economy — without forced stimulation of production — should be running at an annual rate of about \$285 billion at the end of 1951, according to an analysis by the National Association of Manufacturers. This should be sufficient to meet the expected demands of government, consumers and business, NAM says. The estimate does not attempt to gauge production in the event of all-out war. The report estimated that government purchases from the private economy, including defense goods, will amount to about \$52 billion by the end of 1951, leaving \$233 billion for private purchasers. The value assumed for durable goods in private purchases (\$65 billion) is somewhat below the extraordinarily high levels of 1950, but just as high as the year 1948, which was a record at that time.

● Automobile production in the January to June, 1951 period should establish another all-time record according to Ward's Automotive Reports. Ward's estimates that approximately 3,900,000 units will be made during the six-month period. Previous record for the period was set in 1950, when 3,766,470 cars and trucks were

AUTOMOBILE PRODUCTION



manufactured. Material shortages and curtailments to date apparently have not been enough to stem the production tide. As of March 16, according to Ward's, 1,330,500 cars and 311,000

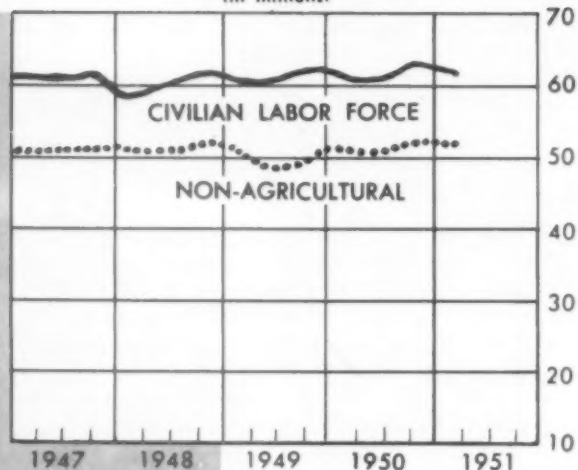
trucks had been built. Total production for last year was 8,015,750 units, highest ever.

● In a talk at Columbus, Ohio recently, Michael V. DiSalle, director of the Office of Price Stabilization, said that by June 30 the agency will have a total of 16,000 employees. Four thousand of them will be enforcement agents. The O.P.S. now has 3,874 employees.

THE PULSE OF BUSINESS

EMPLOYMENT

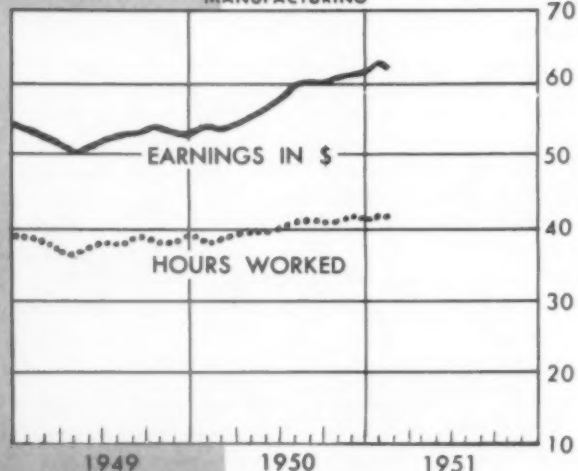
(in millions)



Source: Bureau of the Census

AVERAGE WEEKLY EARNINGS AND HOURS

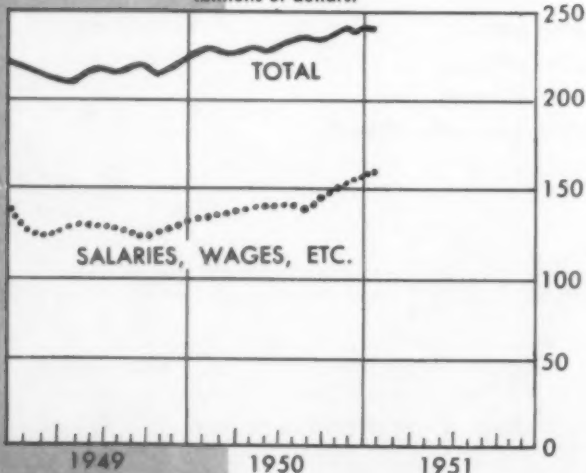
MANUFACTURING



Source: U.S. Department of Labor

PERSONAL INCOME

(billions of dollars)



Source: U.S. Department of Commerce

The fever of inflation seems to have moderated slightly, but the changes in temperature have been too limited for anything but the most cautious diagnosis. A drop of one-tenth of one per cent in the wholesale price index in one week should hardly be greeted with huzzahs, but it at least signals a temporary halt in the frantic upward movement that had prevailed for months. It was accompanied by hesitancy in commodity markets here and abroad and indications of an attitude of watchfulness by both industry and consumers.

Nobody in O.P.S. had publicly credited the agency with bringing about this adjustment by establishing price ceilings. But to forestall the possibility, several observers were quick to point out that the Government actually had added fuel to the inflation fire after Korea by its anticipatory statements on what it was going to do to control advancing prices, scarce materials, etc. Manufacturers, distributors, and consumers, now better educated in how to avoid being caught short in wartime, were only spurred to greater efforts to build stocks of what they needed and wanted. Prices, of course, began leaping upward. Now the reaction is setting in. Blaming it all on the Government is an oversimplification, of course, but there is no doubt that inventories at all levels are beginning to bulge slightly partly because of panic-buying.

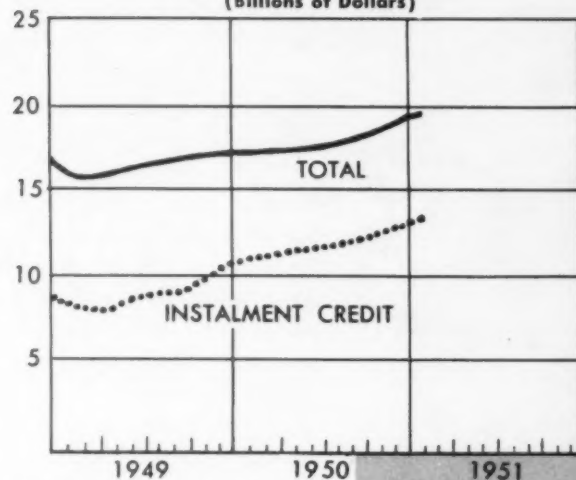
Another important factor has been the improved military situation—i. e., the excellent progress in rearming, and continued successes in Korea. This has tended to have a psychological and practical effect in stabilizing the rush to build up stocks. Ironically, the prospects of "peace breaking out" have roused some fears of a recession. Generally speaking, however, business is realistic enough to know that despite momentary appearances, Russian pressure of one sort or another will continue, and consequently bring in its wake continued inflationary pressure here.

The defense program can be expected to go forward diligently regardless of peace rumors and genial gestures from the Kremlin. Competition for materials and goods will get keener as military requirements drain off available supplies. The revolt of labor against stabilization efforts is not something that will die down easily, and it is widely felt that further wage increases will be granted. The influx of this increased purchasing power into an economy suffering from growing shortages, if it occurs, can only contribute to inflation.

Inflation's pause has not affected plans to fight the problem itself through strong controls on credit. The new 23¼% long-term issues of the Treasury and the withdrawal of Federal Reserve support have made the bonds a better investment to banks. For that reason they are expected to be less inclined to sell them to the Federal Reserve. This, in turn, tightens credit, since they do not have as much cash available for loans to business and individuals. A warning of "more drastic types of compulsory restraint" on lending institutions was issued by Thomas B. McCabe, chairman of the Federal Reserve Board, if they failed to meet the government's request for voluntary curbs on credit.

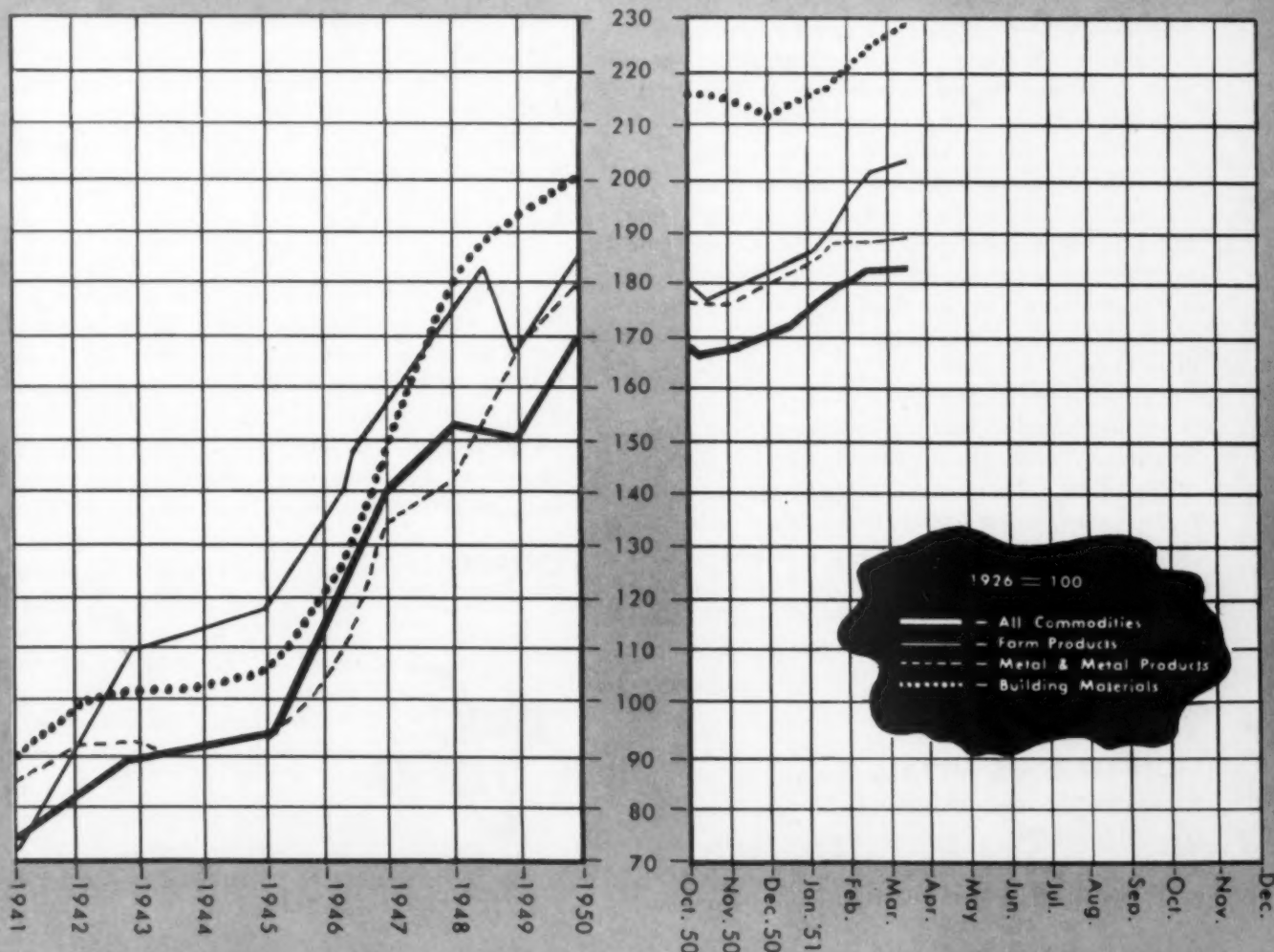
Basic figures charted on these two pages reflect some of the readjustments taking place as the first six hectic months since Korea give way to a more orderly preparation for defense. Overall employment dropped slightly in January, due to seasonal changes. Employment in primary metal and metal products plants has continued its rise, but at a reduced rate. Both the average work week and average earnings dropped, but only a fraction, in January. This was due in part to seasonal slackening and brief inventory-taking shutdowns in many industries. Some of the decline, however, can also be attributed to the settling down of the rapidly expanding activity that followed the Korean war. Personal income declined somewhat because of the reductions in dividends that had been so heavy in December. Consumer credit was off, but not substantially, indicating that Federal Reserve restrictions were having little effect to this point.

CONSUMER CREDIT (Billions of Dollars)



Source: Federal Reserve Board

THE PRICE PICTURE



MATERIALS AND MARKETS

STEEL: Record tonnages have become a commonplace in the steel industry, yet the demand seems insatiable. And, from all appearances, it can only get greater. At this writing, output of ingots and castings by the industry

was over 2,000,000 tons for the fifth straight week, with operations at 101.1% of capacity. The only prospect for the coming months is one of a mad scramble for supplies. Military demand has been piling up swiftly, and NPA last month ordered new and greater percentages put aside to meet DO orders. Reserve percentage on eight of ten stainless steel products

was raised to 50%. Increases on other products ranged from 5% to 28%. The anticipated cutback in the use of steel for some consumer durable goods was announced as 20%, somewhat lower than had been expected. It is a fair estimate, however, that this reduction will be boosted to 30% in the third quarter.

The frantic efforts by everybody to get steel, and the requests of particular industries for preference because of essentiality are leading to a state of almost hopeless confusion. A Controlled Materials Plan is being looked to as the answer. But trade circles indicate they do not expect it to be put into effect until July 1. Many observers feel, further, that unless a "total" C.M.P. is established the confusion will continue. Under the "limited" C.M.P., military and essential needs would be taken care of, and then non-essential users could fight it out for the rest. Under the complete C.M.P., all steel distribution would be controlled, eliminating the struggle for "free" steel that might be available under the other plan.

N.P.A. has urged increased production of steel plates, particularly sheared mill plates. In all, 700,000 tons of plate steel a month should be produced, according to the agency. It called for additional plate production "as quickly as possible" from strip and sheet mills. If the steel industry is going to meet this requirement for defense, it means one important thing—a cut in sheet steel and other products. Scrap was reported in short supply, posing a potential threat to high steel production.

NON-FERROUS METALS: Demand for all non-ferrous metals continues heavy, amid reports that government stockpiling of some metals is to be cut, easing shortages, but boosted in the case of aluminum. Newspaper reports said that ODM Director Wilson had

urged that copper and zinc stockpiling be reduced, or stopped, to avert greater shortages and unemployment. But up to the present writing, there had been no definite developments to indicate the adoption of such a policy and users were still feeling the pinch.

To overcome the "blighting effect" of the copper shortage, C. Donald Dallas, chairman of the board of Revere Copper & Brass Co., has suggested that the U. S. become a bulk buyer of Chilean copper, absorbing whatever price increase is necessary to bring the metal to market. He mentioned a theoretical price of 23¢ a pound (current U. S. price is 24½¢ a pound), and said the government could arrange for distribution of the copper. His other suggestions include: abolish the U. S. import excise tax on copper; eliminate the black market and establish ceilings in copper scrap (scrap has been selling in some areas far above the price of refined metal); suspend stockpiling of copper until present commitments of producers have been met.

The sensational success of the government in pulling down tin prices by a buyer's boycott has led to the hope that similar action will be taken on other commodities bought abroad. By pulling out of the market, U. S. brought tin prices down from \$1.84 to \$1.34 a pound. The Reconstruction Finance Corp. has been named by N.P.A. to handle all buying of tin in this country, beginning May 1. Supplies will be sold to private industry by the General Services Administration.

Reports that the Government intends to step up aluminum stockpiling was bad news to users already thwarted by short supply. The N.P.A. cutback of 35% for the first quarter has been maintained without increase for the second quarter but it offers little solace to those who have been unable to get adequate amounts under any conditions . . . Aluminum production in February was more than four million pounds greater than in January, according to the Aluminum Association, and almost 32 million pounds over January, 1950.

CHEMICALS: General tightness of supplies prevails. Caustic soda, sulphuric acid, naphthalene, phenol, are still in heavy demand and short supply, with small prospects of improvement . . . Machinery for allocation of scarce chemicals has been set up by N.P.A. Order M-45. First chemicals expected to be controlled by the order are sulphuric acid, naphthenic acid, chlorine and benzene.



Proved Policies of Inventory Control

By B. D. Henderson

General Purchasing Agent
Westinghouse Electric Corp.
Pittsburgh

Address at the 20th Annual Midwinter Conference, Public Utility Buyers Group, N.A.P.A., Pittsburgh, February 19, 1951.

INVENTORY control is still the most important factor in a purchasing agent's business life. This is true in spite of priorities and today's shortages. A purchasing agent today who is not backed up by good, sound inventory control is like an army which must fight a war without the proper weapons.

Poor inventory control destroys the purchasing agent's stock in trade, his ability to negotiate. Poor inventory control destroys time, his most priceless asset. It also causes the dissipation of the time and energy of his entire organization on minor emergencies.

We are today faced with a period in which all manner of things are in short supply and almost nothing can be obtained with certainty just when wanted. There is not time to do everything. First things should come first. Our inventory policies should be a powerful tool to help us do first things first.

Toward that end, let's consider some of the fundamental facts about inventory control. Consider first the fact that most of the money spent for inventory items is concentrated in a relatively small number of items.

Concentrate on Important Items

For example, in a typical inventory, 10% of the accounts are responsible for $\frac{2}{3}$ of the money spent for inventory. Looking at it the other way, 75% of the accounts which are the smallest will affect only 10% of the money spent for inventory. (See Figure 1.)

This is very significant, particularly under today's conditions. We have statutory limitations on inventory, controls by the National Production Authority on certain items, in addition to our own limits on inventory investment. If we try to



Figure 1. Concentrate your efforts on the items of large dollar volume.

stay within these limits on each and every item, separately and independently, the task would be impossible.

For example, suppose our inventory contains 10,000 items. Suppose further that we try to maintain one month's safety stock or reserve factor. This would mean that it would be necessary to place 10,000 purchase orders per month to stay within a 60 day inventory on each item. In actual practice, it should be necessary to place less than $\frac{1}{5}$ this number of purchase orders to get exactly the same results in the aggregate.

How can this be done? If we concentrate our time and attention on those items which represent the large proportion of our investment, it is possible to do a much better job of controlling inventory than if that time, effort and attention were dissipated equally over all items regardless of their value or importance. This leads us to the conclusion that large and important items should be ordered more frequently and scheduled more closely than items low in dollar value. Unquestionably, this is done to some extent in all inventory control just by the exercise of common sense. However,

• \$1,000 PER YEAR USE • ORDER COST \$3.50 EACH INVENTORY CARRYING COST 10% ANNUALLY				RESULTING AVERAGE INVENTORY DUE TO ORDER
ORDERS PER YEAR	ORDER COST	CARRYING COST	TOTAL ANNUAL COST	MONTH'S SUPPLY
1	\$ 3.50	\$50.00	\$53.50	6
2	7.00	25.00	32.50	3
3	10.50	16.66	26.66	2
4	14.00	12.50	26.50	1½
6	21.00	8.33	29.33	1
12	42.00	4.16	46.16	½

Figure 2. Most economical inventory results when ordering cost and carrying cost are equal.

to obtain the maximum results, it is necessary that this process be rationalized, so that by analysis we can determine just how big a purchase order should be.

Best Ordering Quantity

These are only two actions that you can take to control the size of your inventory. One is to determine the size of the shipment that you will schedule for delivery at a given time; the other is to determine the amount of stock that you plan on having available when that shipment is received. The first of these, the size of the order or shipment, is primarily a question of economics or cost factors.

Every purchase order that you write and every shipment that you receive costs money. In our example (Figure 2) we've assumed \$3.50 as the cost of an extra order. It costs money to write the order, follow it up for shipment, receive it, inspect it, and to pay the bill. It also costs money to carry the extra inventory created by the order. Our example is based upon the carrying charges for the inventory created to supply \$1000 per year usage. It costs money to cover the risk of depreciation or obsolescence on the additional investment.

The best size of order to place is one which results in the best combination of these two costs. You can convince yourself by trial and error or you can prove mathematically that the most economical size of order is one in which the cost of placing the orders each year is the same as the cost of carrying the inventory which results from those orders. For example, an item which

represents a thousand dollars' usage per year is handled most economically when something slightly less than 4 orders per year are placed.

Now, let us look at a curve (Figure 3) which shows us the relationship between the annual cost of carrying this inventory and the number of months' supply which we order for shipment each time. If we place either larger or smaller orders than our most economical order quantity, the total cost to us each year will be greater. In other words, there is only one economical order point, the low point on the curve—slightly less than 4 orders per year.

Graphic Proof

What happens if we change the number of dollars worth of material used each year. In Figure 4 we have three different annual values of material used. You have already seen the curve for a thousand dollars per year usage. Here is also a curve for \$250 a year and \$4,000 a year. Notice that the higher the dollar value, the smaller the order which should be placed. For \$4,000 a year, we should order just under 2 months' supply each time. For \$1,000 a year, we should order just over 3 months' supply each time. For \$250 a year usage, we should order approximately six months' supply at a time.

Let's take a look at the relationship between the size of order and annual usage. (See Figure 5.)

Do you see how beautifully this fits in with our need for concentrating our time and attention on the most important items? Both common sense and the cost figures say,

"Order the big items frequently and order relatively small quantities in terms of weeks' or months' supply. At the same time, if you use only a small number of dollars worth of material per year, order large quantities that will last a considerable period of time."

If this theory is followed, it can reduce your shortages an unbelievable amount. Since, characteristically, a large percentage of the items in stock are relatively small in dollar value, these smaller items are ordered less frequently and, consequently, the total number of orders placed is sharply reduced, even though the turnover of the inventory is changed little, if any. The net result is far fewer orders placed, far fewer orders open, and, consequently, far fewer chances for trouble. In terms of purchasing department and stores operation, it means fewer shortages, lower costs, better utilization of time and personnel, and better inventory turnover.

This is no untried theory. This method of operation has been in use in several of our plants for as long as six years and, wherever it has been introduced and no matter how good the stores operation was previously, it has always resulted in the results that I just mentioned: lower cost, fewer shortages, better utilization of time and personnel, and better inventory turnover. Characteristically it cut shortages in half without increasing inventory. I can think of nothing which can be done that will so quickly improve the operation of stores and purchasing with so little effort.

Size of Safety Stock

This leaves us with only one other decision that we can take to control the size of our inventory. If we have decided on the size of the order to place, we will determine the size of our inventory when we decide how much stock to plan on having available when the scheduled shipment is received. Incidentally, this reserve or safety stock characteristically represents 60% to 80% of the total inventory content. Conversely, the order size which we mentioned previously only represents 20% to 40% of the total inventory content.

Let no one think that any inventory can be operated without provision for this safety stock or reserve. That would be possible only if there were never any unknown in inventory operation. You'd have to know exactly how long it would

take your supplier to ship, the supplier would always have to exactly meet your requested shipping date, and you would always have to know exactly how much material would be used while the order was open. None of these can ever be determined precisely. Since they cannot be, this safety stock must be provided unless you can afford to have a large proportion of your items out of stock at all times.

The size of the safety stock is determined by three factors:

1. How many items out of stock can you afford and still service properly your operations?
2. How long does it take to get the material after you place the order?
3. How much material will be used while the order is open?

Nothing but experience can tell how many items out of stock can be tolerated for your particular operation. It should, however, be a matter of record. If you have kept a record of your stock-out rates in the past, your experience will tell you what can be tolerated for your particular operation. For example, several of our divisions have established the fact that they can operate successfully without serious effect on production, if they have $1\frac{1}{2}\%$ of the stores items out of stock at any one time. If 3% of the items are out of stock at any one given time, the losses in production become serious. At 5%, the schedules are completely disrupted, output is reduced, and the purchasing department is having a grim, miserable time. But, as I have said, these limits can only be established for your operation from your own experience.

Once having established the frequency of stock-out that you can permit, it is then possible to determine with some accuracy the kind of reserve necessary to maintain that stock-out rate at an acceptable level.

Procurement or Lead Time

Consider procurement time. The longer the procurement time, the more inventory is required to get the same results. This should be no surprise to you. Inventories always go up when procurement time is increased. Inventories must go up when procurement time is increased, if operations are to be maintained.

If procurement time were zero, no safety stock would be required because any stock-out could be replaced instantly. On the other hand, suppose the procurement time is one year. All the influences which affect your supplier's ability to de-

liver have a chance to accumulate during that year. Your supplier had to estimate his total production for a year in advance. Even a 10% error in estimating his total production would result in a misdelivery of more than a month. Even a month's safety stock would not be enough to protect you against this one variable alone. And it is a fact that when suppliers increase their quoted procurement times, they are usually scheduling at capacity and, more often than not, ship later than the scheduled time, rather than earlier than the scheduled time. A survey of one of our plants disclosed recently that 90% of our receipts had been shipped more than one month after the quoted and scheduled delivery date. A care-

ful, statistical analysis made it possible for us to allow for the amount that each major supplier would ship late; even then, increased procurement time made additional inventory necessary.

Of course, the longer procurement time also introduces another unknown which must be covered. The longer the procurement time, the more difficult it is for you to predict your own usage or consumption while the order is open. If the procurement time were zero, it would be unnecessary for you to make any predictions. But, suppose the procurement time is one year, then it becomes necessary for you to predict the sum total of all your needs for a whole year. Any mistake that you make in guessing



Figure 3. There's only one economical ordering quantity, depending on rate of usage.

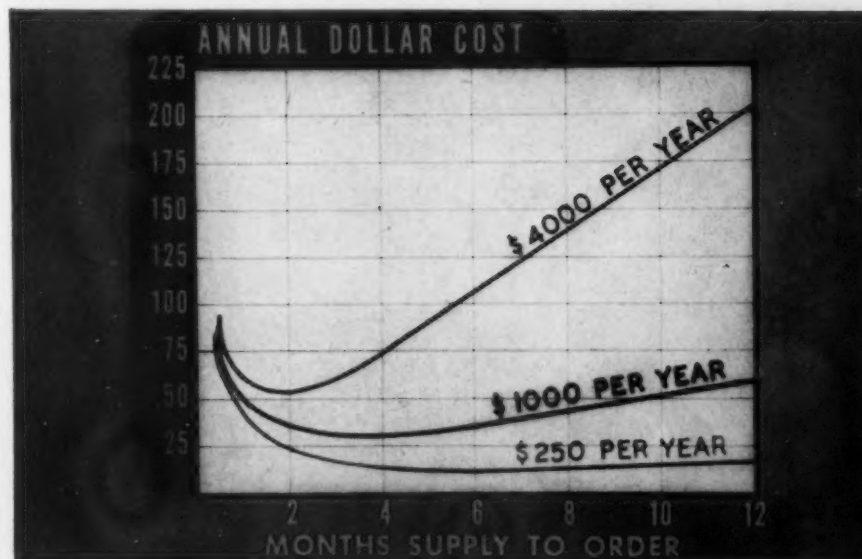


Figure 4. The higher the dollar value, the shorter should be the inventory coverage.

your rate of consumption will accumulate for a whole year. Again, a mistake of only 10% in your forecast would equal more than a month's stock by the end of the year.

The error in estimating the procurement time itself and the error in estimating the usage during the procurement time can either add or cancel out. The combination of the two errors could equal zero or it might mean more than two months' safety stock to cover a 10% error. The methods used to determine how much safety stock is required after you know the stock-out rate you can tolerate would make a subject in itself. However, there is one simple relationship that should not be omitted from this discussion.

The Laws of Probability

The more frequently you order an item, the more safety stock is needed: Suppose all of your estimates about procurement time consumption are correct on the average. The law of averages still says that you'll be wrong half of the time. This means that, if you provide no safety stock at all, you would run out of stock every other time that you placed an order. Now, for example, suppose you placed an order for a given item once every two years. This would mean that with no safety stock you would run out once every four years. You could probably tolerate that. But, suppose you are ordering that particular item once every month. With no safety stock you'd be in trouble 24 times in 4 years. That you probably couldn't tolerate, and, therefore,

you would find it necessary to provide a larger amount of safety stock because you ordered the item so frequently. This has a bearing on our discussion earlier about the most economical size of order to place. Here is another reason why ordering the small items in large quantities less frequently can result in an elimination of shortages all out of proportion to the small increase in inventory that would be required on that particular item.

There is a precision way of determining safety stocks and the correct time to place an order. It is nothing more nor less than the application of the laws of probability to inventory control. The basic techniques are not new. The techniques are identical in basic theory with those used in statistical quality control which is an old story in many companies. Both the January issue of *Purchasing Magazine* and the January 29 issue of *Steel Magazine* carried articles on statistical quality control. Last year *Fortune Magazine* ran an article on it and called it "the sharpest management tool of a generation." Application of the same theory to inventory control holds far greater promise, both because the application can be made more general and because the alternatives are even less desirable.

Substitution of the slide rule for the rule-of-thumb holds great promise for reducing our inventories, increasing our operating efficiency and immeasurably multiplying the effectiveness of the purchasing department.

All of this discussion may seem academic to those purchasing agents who do not have any control or in-

fluence over inventory policy. However, thoughtful analysis clearly indicates that the major problems in inventory control are basically procurement problems. Furthermore, the efficiency of the purchasing department, itself, is almost a direct function of the soundness of the inventory control policies. No purchasing agent regardless of his ability can operate effectively if the inventory for which he buys is not only efficiently operated, but well coordinated with the procurement factors.

Our experience in Westinghouse has proved to us that analytical study and research in the field of inventory control holds great promise for improving both our operating efficiency and our purchasing efficiency, no matter how good we thought they were before. The techniques I have mentioned are not theoretical or experimental; they have been proved beyond doubt in actual operation. It is just a question of time until we extend them, not only to all of our manufacturing inventories and purchased material inventories, but also to those items which we carry in stock for sale to our customers. We believe that these newer techniques will permit us to maintain a standard of stock availability surpassing anything within the experience of the electrical industry. Of course, that time must be delayed until we can build products faster than they are sold and get a chance to re-establish some shipping stock.

Do not let today's problems of procurement dull your interest in the problems of inventory control. Nowhere can you better apply the old adage, "Better an ounce of prevention than a pound of cure."

Traditionally, the purchasing agent is supposed to buy the right quality from the right source, at the right price, the right quantity and the right time. The last two, the right quantity and the right time, are the essence of inventory control.

If you as purchasing agent do those things necessary to see that the proper inventory control policies are followed and that purchasing considerations are properly coordinated with your inventory control, you will accomplish several things. You'll make a substantial contribution to your company's profit, you will improve the efficiency of the operation; and, for your own part, you will go a long way in proving your right to be a major member of the management team.



Figure 5. Order the big items frequently, the little items for longer periods of supply.

100

● **By R. K. Spofford**
Purchasing Agent
The Okonite Company, Passaic, N. J.

Alteration and cancellation notices make use of the same form, prominently overprinted to indicate their purpose. Color code and distribution is the same as for the purchase order.

APRIL, 1951

August 1, 1950

CRITICAL MATERIALS REPORT NO. 62

Notes: All changes from previous reports are underlined for your convenience.

Item	Remarks
<u>ALUMINUM</u> - Foil	2-6 wks.
Rods	6-8 wks.
Tape	6-8 wks.
Wire - .0126 Armor	3-12 wks.
Wire - EC Grade	
Solid	8-12 wks.
Stranded	All ACSR (Steel Reinforced) 4 wks.
<u>BRONZE</u> - Tape	Bare (All aluminum) - 4-5 wks.
Wire - 90/10	6-8 wks.
Cadmium	6 wks.
<u>CABLE ACCESSORIES</u> - Pothesds	12-wks.
	GMW - Up to 500 MCM 4 wks.
	Larger - 6-8 wks.
Reservoirs	Solder Seal - 12-16 wks
Splice Boxes	G.E. - 30 wks.
	GMW - 1-3 wks. small quantities.
	9-12 wks. large quantities.
<u>COPPER</u> - Tape	6 to 8 wks.
Tubing	8-12 wks.
<u>WIRE</u>	3 wks. on items not stocked for us.
<u>LACQUER & THINNER</u>	3 wks.
<u>WIRE TAPES</u> - Type K & 326	5-6 wks. only if basic material is in stock
<u>PAPER</u> - Cable (All)	5-7 wks
<u>RUBBER</u> - Gatoon Bell	No assu
Latex	has bee
	Nearby
	liquid
	Nougatu
	on #695
	ties.
Para	Governe
	Americ
	covered
Penang	No domest!
	through
	4 wks.
Recisimed	
<u>RUBBER CHEMICALS</u> -	30 days
Carbon Black - all types	4-6 wks
Magnesium Oxide	

Periodical reports are made by the purchasing department on all materials on which delivery time has been extended. This serves as a warning to manufacturing, sales, and supply personnel as to the availability of materials and the lead time required in ordering.

When competitive bids are secured by telephone, quotations are directly tabulated on a mimeographed form, in parallel columns for quick comparison. A standard "Request for Quotation" form is used on major requirements and when time permits such procedure.

Phone Quotations File _____
Date _____

QUANTITY	Bidders		

[illegible][illegible]

(Continued on page 118)

Columbia

A DEPENDABLE NAME IN

Chemicals

For over half a century, Columbia has been a leader in the production of alkalis and related chemicals. And, within the last five years, Columbia has expanded its operations to include a variety of organic chemicals.

Columbia's long-established reputation comes from many things. It comes from Columbia's record as a volume producer of quality chemicals . . . from the expert technical service Columbia renders to its customers . . . and from Columbia's many improvements and innovations in chemical manufacturing, shipping and handling.

The customers of Columbia know they can always count on top quality chemicals and technical assistance that may lead to savings in shipping and storage space, time, labor and money.




SODA ASH
CAUSTIC SODA
LIQUID CHLORINE
SODIUM BICARBONATE
CALCIUM CHLORIDE
PHOSFLAKE
CLEANER AND CLEANSER
S. P. FLAKE
SODA BRIQUETTES
CAUSTIC ASH
MODIFIED SODAS
CALCENE T
SILENE EF
HI-SIL
MONO-CHLOROBENZENE
ORTHO-DICHLOROBENZENE
PARA-DICHLOROBENZENE
BENZENE HEXACHLORIDE
MURIATIC ACID
PITTCOLOR
PACIFIC CRYSTALS
BORAX
PERCHLORETHYLENE

COLUMBIA

CHICAGO • MINNEAPOLIS • BOSTON
NEW YORK • CINCINNATI



CHEMICALS

ST. LOUIS • CHARLOTTE • PITTSBURGH
CLEVELAND • PHILADELPHIA

Executive Offices: Fifth at Bellefield, Pittsburgh 13, Pa.

PAINT • GLASS • CHEMICALS • BRUSHES • PLASTICS



PITTSBURGH PLATE GLASS COMPANY

Daily reporting of pertinent information keeps all departments well informed on current developments. Purchasing reports all price changes as they occur, for the benefit of estimating and cost departments. A daily report is made on rubber prices.

As shipping promises are received from vendors, they are passed along to the supply department in a daily tabulation to assist in directing expediting action.

Plant buyers send a daily report to the purchasing agent, listing the orders placed and the dollar value of commitments by months in which deliveries are to be made. On the basis of these reports, the purchasing agent makes a consolidated report to the treasurer, listing dollar value of commitments placed each day and cumulative total for the month to date.

ONE 100-A NEW 5-10

INTER-OFFICE CORRESPONDENCE

Office PURCHASING To PASSAIC WILKES-BARRE

Attention Mr. P.S. Keefer Date _____

Subject Raw Materials Price Changes

COMMODITY FROM TO EFFECTIVE

ONE 100-B NEW 5-10

INTER-OFFICE CORRESPONDENCE

Office Passaic To Passaic, Wilkes-Barre

Attention Messrs. C. W. Scowcroft Date _____

Subject RUBBER - Daily Price Report

On _____ #1 Ribbed Smoked Sheets closed at _____
per pound.

#1X Thin Brown Crepe closed at _____ per pound.

g Agent

SHIPPING PROMISES RAW MATERIALS		
COMMODITY	P.O. NO.	PROMISE DATE

TO: Mr. R. K. Spofford Date Orders Placed _____

DAILY PURCHASE COMMITMENTS

P.O. No.	Material	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.

TO: Mr. A. F. Metz Date Orders Placed _____

DAILY PURCHASE COMMITMENTS
Passaic and Wilkes-Barre Plants
Combined

Delivery Month	Daily Total	Total Month To Date	Remarks
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Total			

cc: Messrs. D. R. Stevens
C. P. Knight

By _____
Purchasing Agent



THINSTEEL *KICKS OUT* MR. O. V. (Profit Thief)

You can "give the boot" to Oversize Variation in strip thickness, not uncommon in ordinary strip steel, by specifying and using Thinsteel. When deliveries of this precision cold-rolled strip steel are possible under today's conditions, it assures you of maximum yield per ton, particularly important now when every ton of steel must be stretched as far as possible—"kicks out" for good the hidden profit robber, Mr. O. V.

CMP Thinsteel in low carbon, high carbon (annealed or tempered) and stainless grades, offers uniformity in all physicals too, in coil after coil—reduces shut downs, increases die life and units of production for each hour of machine time expended.

Now, CMP is actively engaged in expanding Thinsteel production. New Mills and other additional producing facilities are planned and there is more to come.



the Cold Metal Products co.
YOUNGSTOWN 1, OHIO

NEW YORK • CHICAGO • INDIANAPOLIS • DETROIT • ST. LOUIS • LOS ANGELES

WAREHOUSE STOCKS OF CMP THINSTEEL ARE AVAILABLE FROM:
THE COLD METAL PRODUCTS CO. of CALIFORNIA, 6600 McKinley Avenue, Los Angeles
Phone: Pleasant 3-1291

THE KENILWORTH STEEL CO., 750 Boulevard, Kenilworth, New Jersey
Phones: N. Y., COurtlandt 7-2427; N. J., UNionville 2-6900
PRECISION STEEL WAREHOUSE, INC., 4425 W. Kinzie, Chicago • Phone: COLUMbus 1-2700

Fair Labor Standards for Purchasing How Interstate Commerce Laws Affected Purchasers in 1950

DURING the year 1950 several new interstate commerce laws and higher court decisions became effective and very importantly affected all purchasers. We shall briefly review the outstanding decisions.

First, we shall briefly review the new Fair Labor Standards Act which became effective January 25, 1950. In the meantime several points of the law which, at first, were vague now can be interpreted with certainty for the benefit of readers.

As is well known, the new Act increases minimum wages, for the first 40 hours in each week, from 40 cents per hour to 75 cents per hour, and one and one-half times the *actual* wages earned by employees who are not exempt from the Act must be paid for time over 40 hours.

It is important to know that the Fair Labor Standards Act was in effect over 11 years before it was first amended in 1947. In this latter year Congress realized and admitted that the law was creating wholly unexpected liabilities to employers in immense amounts which may seriously impair the credit and financial status of many employers. Hence, in the year of 1947 Congress amended the Act so that employers could *compromise* with employees, and in this manner settle the many thousand claims which threatened to impair or ruin employers. Previously compromise agreements between employers and employees were illegal. Quite obviously, the reason so many large claims accumulated against employers for back wages, lawyer fees, penalties, etc., was because a great many employers did not have dependable legal knowledge as to their exact legal rights and liabilities.

By Leo T. Parker

As above mentioned, minimum wages are increased by the new Act from 40 cents per hour to 75 cents per hour, and one and one-half times the actual wages earned by an employee must be paid him for all working hours over 40 hours each week. Hence, although the specified minimum wage is 75 cents per hour yet an employee, not exempt from the Act, who for instance is paid on the basis of \$2.00 per hour, must be paid \$3.00 per hour for all hours he works each week in excess of 40 hours.

When Purchasing Agent Is Exempt

Some controversy has existed during the past few months over the question of what purchasing agents are exempt from the new Fair Labor Standards Act. This is important for these reasons: If a purchasing agent is *not* exempt from the Fair Labor Standards Act he must be paid one and one-half times his regular wage for all hours

worked over 40 hours each week. A purchasing agent's "time" includes *all* hours he works in an office, on the road, and at his home. On the other hand, a purchasing agent who is exempt from the Act need not be paid for any overtime.

The writer has expended considerable time and effort in reviewing the new law, regulations and higher court decisions in order to formulate a dependable rule which determines whether a particular purchasing agent is exempt from the new Fair Labor Standards Act and need not be paid wages on the basis of ordinary employees, or otherwise be regulated by the Act.

Briefly, the new Fair Labor Standards Act states that if an administrative employee, such as a purchasing agent, receives \$100.00 per week or more, he is exempt from the Fair Labor Standards Act, providing he uses his own independent judgment, discretion and ability when purchasing merchandise. Purchasing agents are within the scope of Section 541.207 of the new Fair Labor Standards Act. In other words, a purchasing agent is



**WORKING AFTER HOURS TO FINISH THE JOB DOESN'T COUNT
AS LEGAL OVERTIME FOR THE P.A.**

O-B Disc Stops Turning

Before damage starts

● You can eliminate a major item in valve maintenance costs by installing O-B composition disc valves in your plant. Available in globe and angle types, O-B standard pressure valves feature a free-swiveling disc holder that reduces to a minimum the normal operating wear and tear of composition valve discs. As a result, discs last longer and require less frequent renewal. You save not only maintenance time for disc replacement but greatly reduce costly "down time" on process and service lines.

Excessive wear or damage is prevented by free-swiveling disc holder which allows the disc to stop turning on the first contact with the raised seat. Further rotation serves only to make a better compression seal but does not gouge or cut the composition disc.

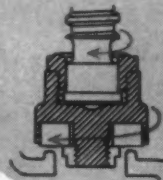
The free-swiveling design also provides a self-leveling seat which distributes wear evenly all around the seating surface. Disc renewal when necessary is quick and easy, and adds many years of leaktight service to the valve. For lower maintenance costs and better valve operation, be sure to specify Ohio Brass valves. Your local O-B distributor will be glad to serve you for any of your industrial valve needs.

OHIO BRASS CO.

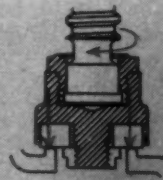
MANSFIELD, OHIO



O-B No. 10 Line Composition Disc Valve. Available in Globe, Angle, and Check Types, 1/4 to 3 inches in size.

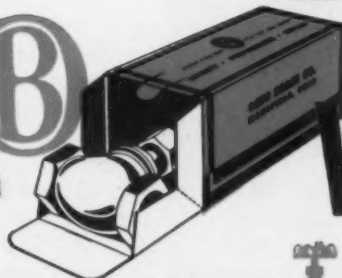


When disc contacts valve seat, disc rotation ceases. Free-swiveling disc holder permits further stem rotation. Rotation produces leaktight compression closure but does not grind or gouge disc.



4074-V

Ohio Brass



VALVES

BRONZE



GLOBES



ANGLES



GATES



AND



CHECKS

an "administrative" employee and exempt if he has the authority to make an independent choice, free from immediate direction or supervision, and with respect to matters of significance.

The higher courts hold that it is not possible to apply a general rule which will distinguish between the making of *real decisions in signifi-*

to management policies or general business operations, and he is an administrative employee.

It is quite apparent that the average purchasing agent who exercises ordinary discretion in making purchases for his employer is an administrative employee.

On the other hand, if the purchasing agent receives less than

for resale (In other words, if 26% of his sales are made to purchasers who intend reselling the merchandise he is *not* a retailer); (3) also, more than 85% of goods which he may manufacture or produce must be sold to purchasers *within* the state; (4) and 75% of his annual dollar sales must be *strictly* retail.

If he violates even one of these rules he is *not* a retailer and his employees are *not* exempt from the Fair Labor Standards Act.



TSK! TSK! MUSTN'T LOOK IN THE FILES OR YOU'LL LOSE YOUR RATING AS AN EXECUTIVE

cant matters and the making of choices involving matters of *little or no consequence*. It is clear however, that the term "discretion and independent judgment," does not apply to the kinds of decisions normally made by clerical and similar types of employees. The term *does* apply to the kinds of decisions normally made by the average purchasing agent.

The policies formulated by the purchasing agent of a large corporation may be subject to review by higher company officials who may approve or disapprove these policies. The same is true regarding unusual purchaser contracts. For example, a purchasing agent may be required to consult with top management officials before making a purchase commitment for raw materials in excess of the contemplated plant needs for a stated period. Nevertheless the purchasing agent exercises discretion and independent judgment *within the meaning* of the new Fair Labor Standards Act despite the fact that his decisions or recommendations are reviewed at a higher level or by his superiors. So, therefore, when the work of a purchasing agent is of substantial importance to the management or operation of the business; even though it may be limited to purchasing for a particular department of the business, the work or services are directly related

\$100.00, but more than \$75.00 per week, he still is exempt from the Fair Labor Standards Act if he acts as above explained and uses his own discretion when purchasing merchandise for his employer, *or* he may regularly assist his superior. He is exempt if he receives between \$75.00 and \$100.00 per week and performs special assignments which require technical knowledge or training in the purchasing of merchandise. However, he may not spend more than 20% of his time in performing *ordinary* work, such as is done by employees who are within the terms of the Act and paid specified minimum wages. And a purchasing agent who earns less than \$75 per week *cannot* be exempted from the Fair Labor Standards Act *no matter* how much authority he has. This last statement has great importance.

Retailer Is Exempt

The new Fair Labor Standards Act exempts certain "retailers" from the scope of the law. The Wage and Hour Administrator has authority to define what "retailers" are exempt. This is the law: In order to be exempt from the Act as a retailer of merchandise, and supplies, the retailer must *prove* that (1) 50% of his annual *dollar sales* are to purchasers *within* the state; (2) 75% of his dollar sales of merchandise or service are *not*

You Can Simplify Payroll

The new Fair Labor Standards Act enables purchasers and all other employers to simplify payrolls. Under certain new conditions you need not pay employees time and one-half for overtime. This was impossible under the old law.

For example, assume that an employee is on the pay roll at \$1.00 per hour, with a weekly guaranteed wage of \$80.00 per week. If the employee works only 40 hours this week he receives \$80.00, the guaranteed wage. Actually that amounts to \$2.00 per hour for *this* week. If the employee works 60 hours next week he can also be paid the weekly guaranteed wage of \$80.00. This is so because 40 hours at \$1.00 per hour his payroll rate is \$40, plus \$1.50 per hour for 20 hours overtime is \$30. Hence a payment of \$80.00 does not violate the law. On the other hand, assume that the employee works 80 hours. His lawful payment is \$40.00 plus time and one-half for 40 hours overtime or a total of \$100.00.

Compensation Other Than Wages

Considerable discussion has arisen from time to time over the legal question: What payments to an employee are not lawful wages? This is important because when figuring time and one-half for overtime the pay check will be less if certain payments are excluded as wages.

The following are *not* considered lawful wages, and need not be listed as such on the employee's payroll: (1) Any payment of money in appreciation of services rendered by the employee, but not based on the number of hours he worked. (2) A gift entirely not based on the hours of work done by the employee. (3) Compensation paid an employee during vacation periods, holidays, and days he was sick. (4) Payments made to an employee on days he did no work. (5) Traveling ex-



Christendom was saved by steel

ALL day long, waves of Arab horsemen beat upon the ranks of Charles Martel's veteran militia. But time after time, the enemy cavalry recoiled before storms of iron-tipped javelins, their shining scimitars unsuccessful. On the second morning, the Saracen leader, Abderrahman, was slain, pierced with many spears. The Moslem horde fled back across the Pyrenees, never again to menace the Western world.

Time after time, as at Tours in 732 A.D., Christian civilization has been threatened by seemingly invincible enemies. Yet history proves that victory invariably has gone to the nation or alliance which excelled in the production and use of iron and steel.

In the present era of alarms and crises, it is

reassuring to realize that America has greater capacity for making steel than all the rest of the world combined. Furthermore, the American steel industry is expanding at a rate far faster than that of all the dictator-directed economies behind the Iron Curtain. Our free and independent steel making and metal working industries can and will forge sinews for the peace we want or for the war we may be forced to fight.

So remember this: It is not only the threat of Muscovy to fear—America has itself to fear also—its misguided sentimentalists, its sheltered saboteurs—who seem to play communism's game by frittering away our strength and our resources.



The Youngstown Sheet and Tube Company

General Offices--Youngstown 1, Ohio
Export Offices--500 Fifth Avenue, New York

MANUFACTURERS OF CARBON ALLOY AND YOLOLY STEELS

CONDUIT - PIPE AND TUBULAR PRODUCTS - BARS - RODS - COLD FINISHED CARBON AND ALLOY BARS - SHEETS - PLATES - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - TIE PLATES AND SPIKES.

penses paid to a purchasing agent while he serves his employer. (6) Bonuses or share of profits not provided for in the contract of employment. (7) Pensions, benefits, as old age pensions, and insurance for health or injuries under which the employe receives compensation for illness or disability.

Scope Of Commerce Laws

Considerable discussion has arisen from time to time over the legal question as to what transactions are within the scope of "interstate commerce". We shall briefly review a few late and explanatory higher court decisions on this subject.

According to a recent higher court the transportation of fish to the market from the high seas and territorial waters is "commerce". See *Fishermen & Allied Workers of America v. U. S.*, 177 F. (2d.) 320.

Also, in *Curry v. Union Del Cemento Ponce*, 86 F. Supp. 707, the Federal Court held that a producer of cement which sold about 50% of its product outside of the country was engaged in a business "affecting commerce."

In *Hogue v. National Automotive Parts Ass'n*, 87 F. Supp. 816, the Federal Court decided that an employe who compiled statistical reports and acted as a bookkeeper for a Michigan non-profit corporation, engaged in preparation of such reports for members in various parts of the country and sold automotive parts to jobbers, was engaged in the "production of goods for commerce," and hence was entitled to the benefit of minimum wage provisions of the Fair Labor Standards Act.

For comparison, see *United Artists Corp. v. Board of Censors of City of Memphis*, 225 S. W. (2d) 550. In this case a question was presented the court as to when merchandise in the course of transportation becomes "outside" the scope of Federal regulations. This court held that when merchandise shipped in interstate commerce has reached its *final destination* and is held for local business purposes it loses its "interstate" character and becomes "intrastate business" subject to taxing and police power of the state.

On the other hand, various higher courts have held that goods shipped in interstate commerce *remains* within interstate commerce laws and regulations, if such

merchandise merely is stopped in transit for sorting, or other services. The same is true of merchandise stopped necessarily in transit because of floods, fire, shortage of transportation, etc., etc.

Conversely, merchandise sold intrastate is not within the scope of interstate commerce laws and regulations although subsequently it is used for interstate commerce purposes.

For illustration, in *Moffat Coal Company v. Daley*, 89 N. E. (2d) 892, the higher court held that sales of coal in Illinois to a railroad company were not "interstate transactions" so as to be free from tax under the Retailers' Occupation Tax Act, notwithstanding that the coal was delivered for use outside state.

In this case the testimony showed that the railway company obtained complete possession of the coal in its railroad cars in Illinois at the coal company's mine, was billed by coal company f.o.b. at that place, and was waybilled by the railroad as company freight without transportation charges. In other words, the sale was completed in the State of Illinois. Hence, the fact that the coal was shipped or used in interstate commerce did not result in transaction being interstate in character.

For further comparison see *Carlo v. Okonite-Callender Cable Com-*

pany, 69 A. (2d) 734. In this case the higher court held that a shipment of bromine between two cities in one state for use by the purchaser in process of manufacturing cables which would subsequently be shipped to all parts of world was wholly *intrastate* in character, so that the interstate commerce regulations were not applicable to the sale contract, transportation, or

employees employed by the seller and shipper.

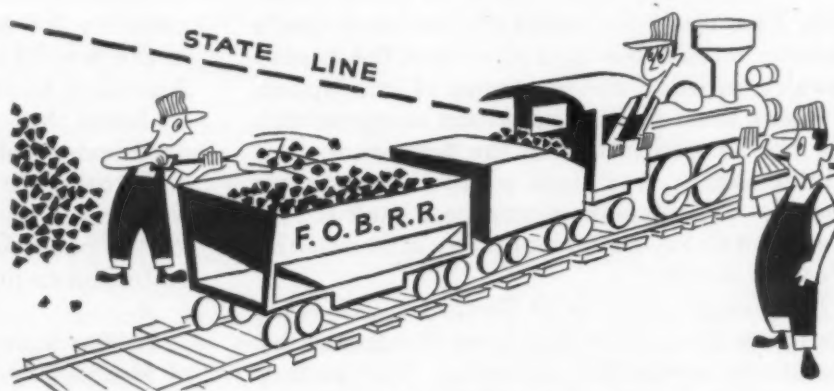
On the other hand, see *Fremont Cake & Meal Company v. Wilson & Company*, 86 F. Supp. 968. This court held a transaction was interstate in character involving a contract for sale and delivery of soybean oil by a Nebraska seller to an Illinois buyer at a specified price f.o.b. Nebraska. In other words, the fact that the shipment was made f.o.b. the seller's state did not result in the transaction being intrastate in character.

Power Of Congress

Modern higher courts consistently hold that the commerce clause confers upon Congress *full* power to regulate commerce. In other words, the extent to which Congress will exercise such power is a matter lying entirely within its discretion.

Therefore, Congress may expressly or impliedly prohibit all state legislation which affects interstate commerce in any field. This is so although such legislation is without the residuum of power left to the states by the commerce clause.

On the other hand, in *Allen B. Dumont Laboratories v. Carroll*, 86 F. Supp. 813, the Federal Court held that where there is only a partial exercise by Congress of the power to regulate interstate com-



OBVIOUSLY THIS COULD NOT BE REGARDED AS COMING WITHIN INTERSTATE COMMERCE REGULATIONS

pany, 69 A. (2d) 734. In this case the higher court held that a shipment of bromine between two cities in one state for use by the purchaser in process of manufacturing cables which would subsequently be shipped to all parts of world was wholly *intrastate* in character, so that the interstate commerce regulations were not applicable to the sale contract, transportation, or

merce, the state may freely legislate upon phases of the commerce that are *left unregulated* by Congress. This court also held that if federal provisions are inconsistent with those of the state the state laws or city ordinances are void.

For example, in *Olan*, 42 So. (2d) 521, the higher court held invalid a city ordinance which required transient solicitors to pay an

EXCLUSIVE

FLUID DRIVE
reduces
clutch wear

**AUTOMOTIVE TYPE
SAFETY BRAKES**
smooth brake action

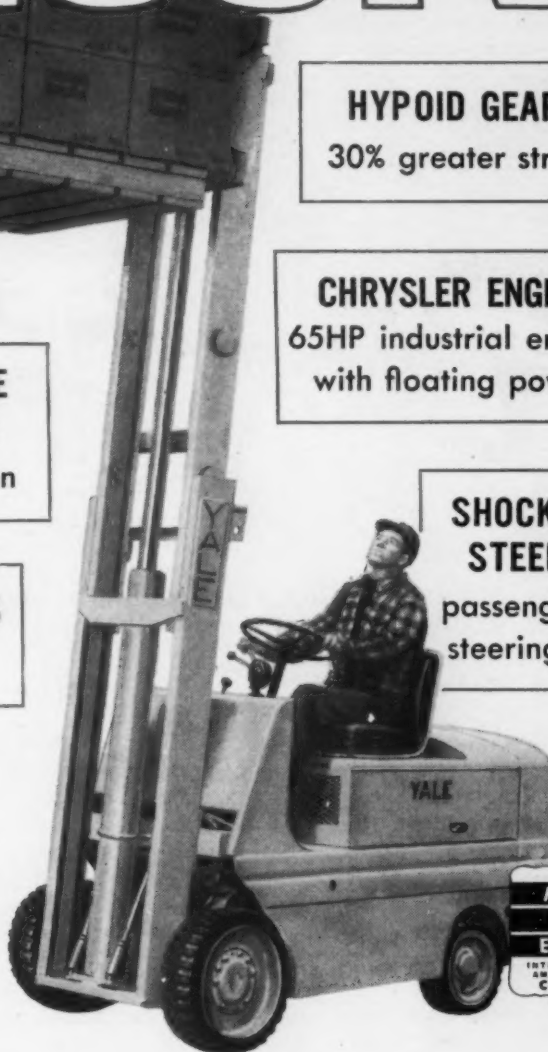
ROLLER CARRIER UPRIGHTS
low friction—long life

HYPOID GEARING
30% greater strength

CHRYSLER ENGINE
65HP industrial engine
with floating power

**SHOCKLESS
STEERING**
passenger car
steering ease

Only **YALE**
combines all these
modern engineering
achievements in one
superior gas truck!



4TH NATIONAL
**MATERIALS
HANDLING
EXPOSITION**
INTERNATIONAL
AMPHITHEATRE
CHICAGO
APRIL 30-MAY 4
1951

**NOW READY FOR YOU...developed to peak efficiency
after 2 years of intensive on-the-job testing**

JUST LOOK at the engineering and technical improvements built into this new YALE Fork Lift Gas Truck!

Here are exclusive features that will bring more time-saving, man-saving, money-saving advantages to your materials handling than was ever before possible!

In every vital part of this truck you get the finest new developments in automotive engineering—every part built for years of hard service—every part tested and re-tested under rugged on-the-job conditions.

That's why today you get smooth, powerful gas truck operation day-in day-out. On steep ramps, rough roadways, in any weather—this YALE Gas Truck *delivers*, moves, lifts and stacks the goods. Let us show you exactly *how* YALE can accomplish all of this in your plant. Write for the facts today.

Capacities up to 10,000 pounds

THE YALE & TOWNE MANUFACTURING COMPANY

In Canada write The Yale & Towne Manufacturing Company, St. Catharines, Ontario.

YALE is the registered trademark of The Yale & Towne Manufacturing Co.

WRITE TODAY FOR FULL INFORMATION

The Yale & Towne Manufacturing Co., Dept. 254
Roosevelt Boulevard & Haldeman Avenue, Phila. 15, Pa.

I am interested in cutting my materials handling costs.
____ Please have your local representative call on me.
____ Please send me FREE detailed literature.

Name _____

Company _____

Street _____

City _____ State _____

YALE

MATERIALS HANDLING EQUIPMENT
Philadelphia 15, Pa.

annual tax of \$50, and local merchants in the same business were required to pay only \$25 for an annual license. This court explained that the ordinance is a fair example of discrimination against interstate commerce. If both transients and local merchants were required to pay the same tax or license fee the ordinance would have been valid.

Federal laws if his intrastate business is in great majority.

For example, in *Atlantic Company v. Citizens Ice & Cold Storage Company*, 178 Fed. (2d) 453, the testimony showed facts, as follows: The Citizens Ice and Cold Storage Company is engaged in interstate commerce in the manufacturing, sale, and distribution of ice

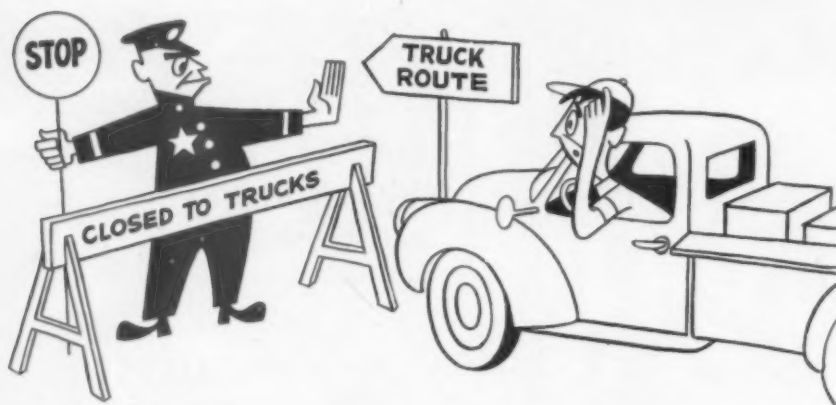
During the trial the testimony proved that actually the Citizens Ice and Cold Storage Company had entered into the price cutting for the purpose of destroying competition and eliminating the new ice company as a competitor. However, further testimony showed that 99% of the price-cut ice was sold *intra-state*, and that its sale of ice to truckers and railroads to transport perishable goods into other states constitutes a part of *interstate* commerce, but that the total of these sales was less than 1% of the total business involved in the local price war.

Nevertheless the lower court held against the Citizens Ice and Cold Storage Company and granted an injunction against further price cutting.

The Citizens Ice and Cold Storage Company appealed to the higher court admitting that the price war was one to stifle competition and gain control of the market, and that *some* of the sales complained of were interstate commerce, but argued that since price was a local one, and all but an insignificant part of the sales were undisputedly made to local customers and intrastate it should not be held liable.

The Citizens Ice and Cold Storage Company contended that the ice sold to truckers and railroad companies was not sold for a specific use in interstate commerce or otherwise, but generally as local sales just as its sales were made to all of its other customers; that if any ice was used to ice shipments moving in interstate commerce, this was done by the customers after, and *not* as a part of the Citizens Ice and Cold Storage Company's sale of the ice to them.

In addition, in support of its contention that if it sold any ice in interstate commerce, it was an amount too small to be significant, the Citizens Ice and Cold Storage Company offered affidavits showing separately its total sales of ice and the total sales to truckers of ice claimed to have been used for icing shipments, and that the latter is only a little more than one-half of 1% of the former. Its contention here was that if this ice, though sold locally in blocks, as its other ice was sold, could be said to have been sold in interstate commerce, it was such an insignificant part of the business done that it would not support that the price cutting was for the purpose of destroying competition and eliminating competi-



CONFLICTING LOCAL ORDINANCES MAY BE HELD INVALID IF THEY HAMPER THE FLOW OF COMMERCE

Then again, see *Transport Company v. Syracuse*, 93 N.Y.S. (2d) 423. Here a city passed an ordinance which excluded heavy truck traffic over all public streets except those on a designated route to the boundary of an adjoining village which had previously passed an ordinance prohibiting heavy truck traffic over this street. The higher court held the last ordinance void, and a burden on interstate commerce, because if both ordinances were held valid interstate trucks would be prohibited from passing through one of the municipalities.

Law Of Price Cutting

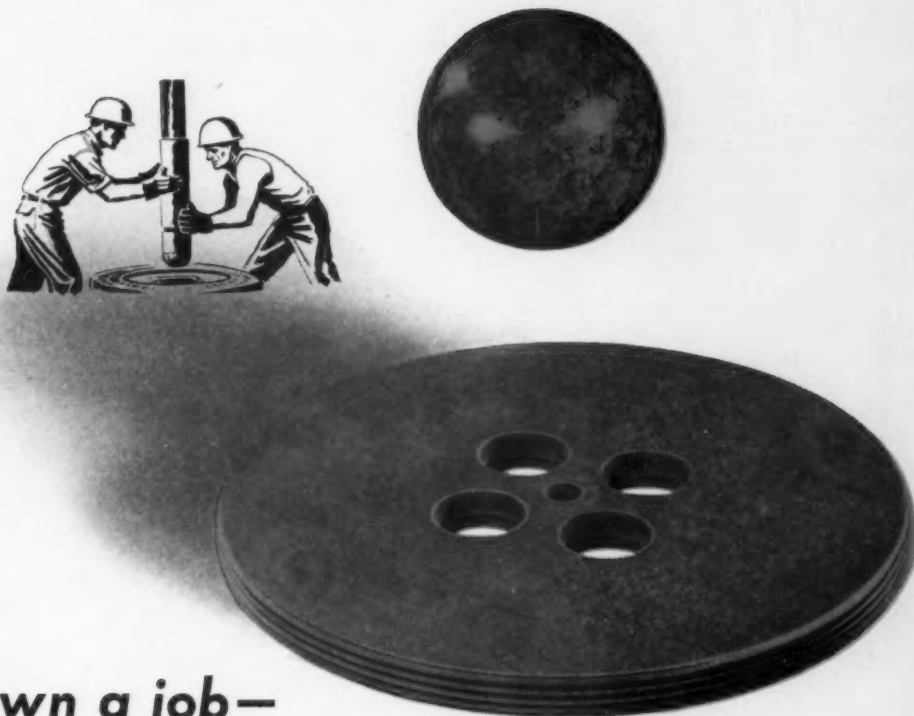
It is well known that Federal anti-trust laws prohibit "price cutting" for the purpose of monopolizing a part of the trade or commerce and destroying competition in interstate commerce. Also, the Sherman Anti-Trust Act prohibits cutting prices on merchandise in *intrastate* transactions which so affect interstate commerce, or the exertion of the power of Congress over it, as to make regulation of them appropriate means to the attainment of a legitimate end of eliminating unfair competition in interstate business.

Nevertheless, according to a recent higher court the fact that a seller cuts prices, although for the admitted purpose of destroying competitors, he does not violate

in a great many cities and towns in Georgia, including Colquitt and Bainbridge, and in other states. In 1947 an ice company in Colquitt, and one at Bainbridge, commenced the manufacture and sale of ice. At that time in practically every city where Citizens Ice and Cold Storage Company had no competition its price of ice was 50 cents per 100 pounds. Soon after the new ice company began their operations, the Citizens Ice and Cold Storage Company cut its prices.

The new ice company sued the Citizens Ice and Cold Storage Company for an injunction restraining it from cutting prices in the sale of ice in Bainbridge and Colquitt, Georgia, in violation of the Sherman Anti-Trust Act and Robinson-Patman Acts.

The new ice company alleged that the Citizens Ice and Cold Storage Company has attempted to monopolize "part of the trade and commerce among the several states in violation of Sec. 2 of the Sherman Anti-Trust Act (15 U.S.C.A. 2)", and that in violation of the Robinson-Patman Act, and in the course of interstate commerce and for the purpose of destroying competition and eliminating competitors in the course of said commerce, by selling ice in Bainbridge and Colquitt, Georgia, at prices lower than those exacted by it elsewhere in the United States.



How to hold down a job— in a mile deep hole

When the well drillers have "made the hole" and an oil well is about to come in, a new job arises. And it's a real trick to handle, especially since there's a joker in it.

The job is to pump wet concrete into the hole to seal the sides. The joker appears because the shoe through which the concrete is pumped . . . the shoe that prevents the wet mix from backing up in the hole to seal it off . . . cannot be withdrawn after the mix has set.

The valve ball and thrust plate of the shoe, illustrated above, must be made from a hard, dense, tough material. They must resist the abrasive action of wet cement under considerable pressure. The ball must be dimensionally stable. Both parts must be moisture resistant. What's

more, after the job is complete it must be easy to drill-out the working parts of the shoe to form a passageway.

This is a rare set of requirements. The makers of the Turbo Jet Float Shoe found in Synthane the material to meet them.

The Turbo Jet Float Shoe takes advantage of several Synthane properties. Other mechanical properties plus good electrical and chemical characteristics form an unusual *combination* which makes Synthane valuable for a wide range of applications. Synthane may be of help to you. To find out, send for the complete Synthane catalog. Address Synthane Corporation, 7 River Road, Oaks, Pa.

PLASTICS WHERE PLASTICS BELONG

SYNTHANE
S

tors in the course of, and of monopolizing interstate commerce.

It is important to know that the higher court reversed the lower court's decision, and said:

"It may not any longer be doubted that the power of Congress and the scope of the Sherman Act's coverage 'extends to those activities intrastate which so affect interstate commerce, or the exertion of the power of Congress over it, as to make regulation of them appropriate means to the attainment of a legitimate end, the effective execution of the granted power to regulate interstate commerce'. It remains true, however, that the distinction between intrastate and interstate commerce still exists; that 'it is the effect upon the interstate commerce or its regulation, regardless of the particular form which the competition may take, which is the test of federal power', and that the question of whether the effect on interstate commerce is substantial is still a determining one. . . . We think it perfectly clear: that what, and all, that is made to appear is a war of local price cuttings; that its effect, if any, upon interstate commerce is insubstantial, inconsequential, and remote; and that the finding that the price cutting was done to impose restraints on, or that it substantially affected interstate commerce, is without support in the evidence. The order granting the interlocutory injunction is reversed. . . ."

For other leading Supreme Court decisions on price cutting of merchandise see following cases: *U. S. v. Wrightwood Dairy Company*, 315 U. S. 110; *U. S. v. Women's Sportswear Mfg. Ass'n*, 336 U. S. 460; *U. S. v. Frankfort Distilleries*, 324 U. S. 293; and *Eastern States Retail Lumber Dealers, Ass'n v. U. S.*, 234 U. S. 600.

Another important established law is that if a seller sells merchandise intrastate he cannot be held to violate the Federal laws, if such merchandise is shipped interstate without his knowledge or consent. See *Jarrett v. Pittsburgh Plate Glass Company*, 131 F. (2d) 674; *Boro Hall Corp. v. General Motors Corp.*, 124 F. (2d) 822; *Dept. of Treasury of Indiana v. Wood Preserving Corp.*, 313 U. S. 62; and *Superior Oil Company v. Mississippi*, 280 U. S. 390.

Furthermore, although certain small sales actually were made in interstate commerce and the seller attempted merely a restraint upon a monopoly of a local business or

local service, the Federal anti-trust acts do not apply, although interstate commerce may be incidentally affected. See *United Leather Workers v. Herket & Meisel Trunk Company*, 265 U. S. 457; *Levering & Garrigues Company v. Morrin*, 289 U. S. 103; *Industrial Ass'n v. U. S.*, 268 U. S. 64; *Lipson v. Socony Vacuum Corp.*, 87 F. (2d) 265; *U. S. v. Columbia Steel*, 334 U. S. 495.

Buyer Or Broker?

Notwithstanding the Federal anti-trust laws are not violated by a price-cutting seller who merely intends to restrain intrastate business, yet few purchasers realize the importance and breadth of the Robinson-Patman Act.

For example, in *Rathke v. Yakima Valley Grape Growers Ass'n*, 192 Pac. (2d) 349, it was shown that a purchase contract was signed by a purchaser and seller. The contract provided that the purchaser may act as a broker, and also act as a purchaser for the products.

The higher court held all contracts relating to the transaction unenforceable and said:

"We are of the opinion that the Robinson-Patman Act, 15 U.S.C.A. 13(c), absolutely prohibits the paying, or granting, or receiving, or accepting anything of value as a com-

as merely regulates and perhaps thereby promotes competition, or whether it is such as may suppress or destroy competition. If the agreement or contract tends to suppress or destroy competition, the anti-trust laws are violated.

Obviously, an agreement or regulation to be in restraint of trade and within Sherman Anti-Trust Act must have some *direct* immediate effect upon *interstate* commerce.

The purpose of the Sherman Anti-Trust Act is to prevent restraints to free competition and commercial transactions which tend to restrict production, raises prices or otherwise control the market or sale of a product to the detriment of the general purchasers.

Patent Law Is Different

On the other hand, the holder of a valid patent may restrict, curtail, control or refuse to sell his patent or patented device during the 17-year term of a patent, and yet he is *not subject* nor liable to prosecution under the anti-trust laws. Moreover, a patentee may legally set or control unreasonably low or high prices at which his invention is sold. And all who either *make* for their own use or for sale; or use; or sell the patented device without authority of the patentee are liable for infringement.



THE EFFECTS OF A PURELY LOCAL PRICE WAR ARE
DEEMED INSUBSTANTIAL, INCONSEQUENTIAL, AND REMOTE

mission, brokerage, or other compensation, or any allowance or discount in lieu thereof, from seller to buyer."

Deals With General Market

Modern higher courts hold that the *true test* of the liability of the Clayton and Sherman Anti-Trust Acts and agreements or regulations restraining trade, of ordinary products, is whether the restraint is such

Considerable discussion has arisen from time to time over the legal question: "If neither a manufacturer nor a purchaser of a product have a patent or trade-mark on the product, can anyone copy and sell the product and not be liable?"

The answer is "yes", providing the copied merchandise is not represented by the manufacturer or seller as his *original* product.

(Please turn to page 326)

You're always right with **AUTO-LITE** Die Castings



● Many of America's leading manufacturers, producing a wide variety of products, are benefiting from Auto-Lite die cast research, experience and advancement. Such developments as high pressure casting, special alloying practices and improved quality through the "controlled metals process" make Auto-Lite the logical source of supply for precision die castings. Address inquiries to:

THE ELECTRIC AUTO-LITE COMPANY

Die Casting Division
Woodstock, Illinois

Lockland Division, Cincinnati 15, Ohio

600 So. Michigan Ave.
Chicago 5, Illinois

723 New Center Bldg.
Detroit 2, Michigan

Tune in "Suspense!"... CBS Radio Thurs. ... CBS Television Tues.

DIE CASTINGS • WIRE & CABLE •

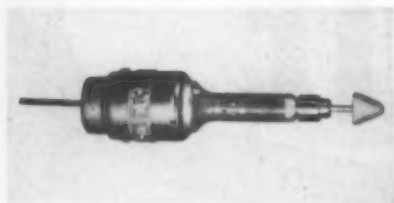
PLASTIC • INDUSTRIAL DIE CASTING

New Products Ideas



For additional information about New Products described in these columns, use coupon on this page.

Hand Grinder Has Power, Speed, Stamina



A fast, powerful, constant-duty hand grinder that can do everything from delicate die jobs to hogging off substantial amounts of stock has been introduced by Chicago Wheel & Mfg. Co., 1101 W. Monroe St., Chicago, Ill. The tool operates at 20,000 rpm; full dynamic and static balance assure vibrationless performance. The grinder, known as "Hi-Power" is merely plugged into the nearest outlet and is ready for operation. It has a Universal Jacobs chuck with $\frac{1}{4}$ " capacity, permitting the use of a 2" grinding wheel or any

$\frac{1}{4}$ " or $\frac{1}{8}$ " shank mounted wheels. It measures 11", overall length, and weighs 5 lbs. 10 oz. It is equipped with 8 accessories, including mounted wheels, sander, chuck key and dressing stone.

No. 101 — Use Coupon on this Page

Silicone Base Finish Resists High Heat

Sicon, a heat resistant finish formulated from a silicone base is said to exhibit unusual stability at temperatures as high as 1000F. Midland Industrial Finishes Co., Waukegan, Ill., the manufacturer, states that it has been proved on the production line for industrial furnaces, heating units, incinerators, etc. It can also be used on mufflers, exhaust stacks, engine boilers, high-temperature processing equipment etc. It can be applied by brush, spray or dip, and requires only a chemically clean surface obtained in any ordinary manner.

No. 102 — Use Coupon on this Page

High-Bay Industrial Lamps Collect Little or No Dirt



Cleaning lamps in high bay areas can boost maintenance cost or slow down production by tying up a crane. General Electric's Lamp Department, Nela Park, Cleveland, O., answers the problem with two high-wattage industrial lamps, with built-in reflectors, which collect almost no dirt at bottom, the only place where light is emitted. G.E. says the lamps, made in 500- and 750-watt sizes will be especially helpful in foundries, welding shops, etc., where dirt collection normally causes severe reductions in light levels. New design, with a special contour, distributes the light downward for effective use in the working areas. A cutoff gives reasonably comfortable brightness down to 35 degrees below the horizontal.

No. 103 — Use Coupon on this Page

Wrenches Reach Small Nuts

Bonney Forge & Tool Works, Allentown, Pa., offers a new series of seven spinner wrenches with composition handles fluted for a firm grip. They are designed for reaching small nuts that can be

(Please turn to page 132)

READER SERVICE COUPON

(April, 1951)

MAIL TO:
PURCHASING—Reader Service Dept.
205 East 42 Street
New York 17, New York

I want more information on New Products Numbers.

101	102	103	104	105	106	107	108	109	110	111	112
113	114	115	116	117	118	119	120	121	122	123	124
125	126	127	128	129	130	131	132	133	134	135	136
137	138	139	140	141	142	143	144	145	146	147	148
149	150	151	152	153	154	155	156	157	158	159	160

Name..... Title.....

Company.....

Street Address.....

City..... Zone..... State.....

Here's another name for **SPRING STEEL**

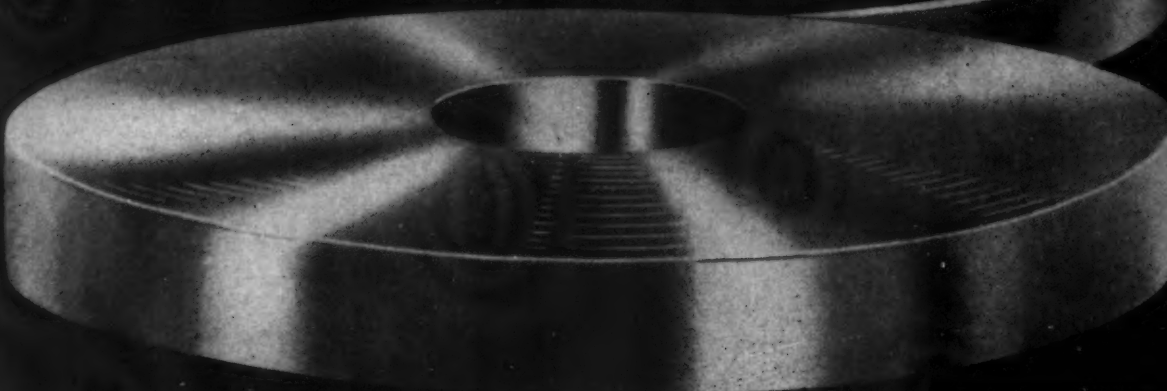
Purdy

Blue Tempered and Polished
Cold Rolled Annealed
SAE 1095 and 1075 in Coils or Straight Lengths
Precision Slit and Sheared to Your Order

The Planet Line
STAINLESS STEELS
COLD FINISHED
STEELS
SPRING STEELS
TUBING
TOOL STEELS
DRILL ROD
COLD ROLLED
STRIP STEEL
ALUMINUM SHEETS
AND COILS

A. R. Purdy Co. has been a leader in spring steel for 35 years. That's why, in addition to *full stocks* and *prompt service*, PURDY can supply the technical advice that will insure your getting the correct type for your requirements. PURDY is depended-on in spring steel because our technicians can answer the questions that count most in steel fabrication. So when you need any type of spring steel—bars, coils, bands, wires and strip—call PURDY. Write, wire or telephone your needs, today!

A. R. Purdy Co. **PLANET**
I N C



NEWARK: HUmboldt 2-5566
CONNECTICUT: ENterprise 6400
NEW YORK CITY: CHelsea 3-4455

MAIN WAREHOUSE and OFFICE
ORIENT WAY & PAGE AVE., LYNDBURST, N. J.
RUtherford 2-8100 - Teletype RUtherford, N. J. - 79

SYRACUSE: ENterprise 6400
ROCHESTER: ENterprise 6400

(Continued from page 130)

handled only with exceptionally small sockets. The wrenches are made like a screw driver with a hexagon socket that grips the nut firmly. Wrenches with hexagon openings of 3/16", 1/4", 5/16" and 11/32" are 6" long and have a drill depth of 2-1/4". The 3/8", 7/16" and 1/2" wrenches are 6-5/8" overall and have a 5" drill depth. Shanks and sockets have plated finish. Available singly or as a set.

No. 104 — Use Coupon on Page 130

Pressurized Extinguisher First for Metal Fires



Ansul Chemical Co., Marinette, Wis., says its Met-L-X is the first pressurized extinguisher for hazardous metal fires. The dry power used as extinguishing agent fuses and forms an air-excluding crust over burning magnesium, sodium, potassium, zinc, powdered aluminum, etc. Without oxygen, the fire goes out. The new extinguishing agent is moisture-repellent, free-flowing, non-toxic, non-corrosive and non-abrasive. It does not conduct electricity and will not deteriorate under normal conditions. The extinguisher is made in 30 lb., 150 lb. and 300 lb. sizes. Larger units, including an automatic pipe system, are also available.

No. 105 — Use Coupon on Page 130

Punch Speeds Washer And Gasket Cutting

Quick, accurate, on-the-job cutting of washers and gaskets is possible with the Centr-O-Punch, made by Rini Metals Co., 1518 Walnut St., Philadelphia 2, Pa. It can be used with leather, rubber, canvas, felt, soft brass, copper, lead, and other light materials. The tool is self-centering and self-ejecting. There is no clogging of barrel to cause loss of time and efficiency. Nine interchangeable cutters produce any combination of inside and outside diameters up to 2 1/2".

No. 106 — Use Coupon on Page 130

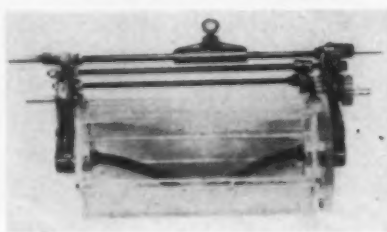
Circular Milling Attachment



A new circular or rotary milling attachment, for use with its smaller knee-type milling machines, has been announced by The Cincinnati Milling Machine Co., Cincinnati 9, O. Intended primarily for toolroom work, it can be used efficiently for high production milling operations on small parts when properly tooled up. The attachment is built in two styles: the manual feed, and the power feed. For both styles, the table is 12" diameter; machined with four standard 9/16" T-slots; rotated through a worm and wheel having 80 to 1 ratio; and graduated in degrees on its circumference. Both styles may be equipped with an auxiliary indexing attachment.

No. 107 — Use Coupon on Page 130

Cylinder for Barrel Plating Is Made of Plexiglas



The Hanson-Van Winkle-Munning Co., Matawan, N. J., has a new cylinder for barrel plating which is made of Plexiglas. Illustration shows a 14" x 30" O.D. cylinder with rubber covered hanger arms and flexible dangler contacts. Plexiglas is suitable for either cyanide or acid solution, and can be carried through the entire cleaning, pickling and plating cycle. Cylinders will be equipped with suitable gears and hangers for different solutions. The cylinder is guaranteed to stand up under temperatures of 185F. The hanger arm construction is said to represent a great improvement, especially on the rubber covered arms. With the flexible dangler contacts, H-VW-M says, all chances of treeing are eliminated and maintenance costs are greatly reduced.

No. 108 — Use Coupon on Page 130

Power Feed Machinery For Finished Materials

DeWalt's Model 400 power feed machines permit users to produce their own hard-to-get finished materials. Model GE 400 (shown) radial arm machine features a safety power feed unit—safety power feed and custom table top. Model GR 400 is a standard model with the same features. The custom table has a pressure arm, a spring hold-in and a spring tensioned hold-down. This permits the operator to run mould-



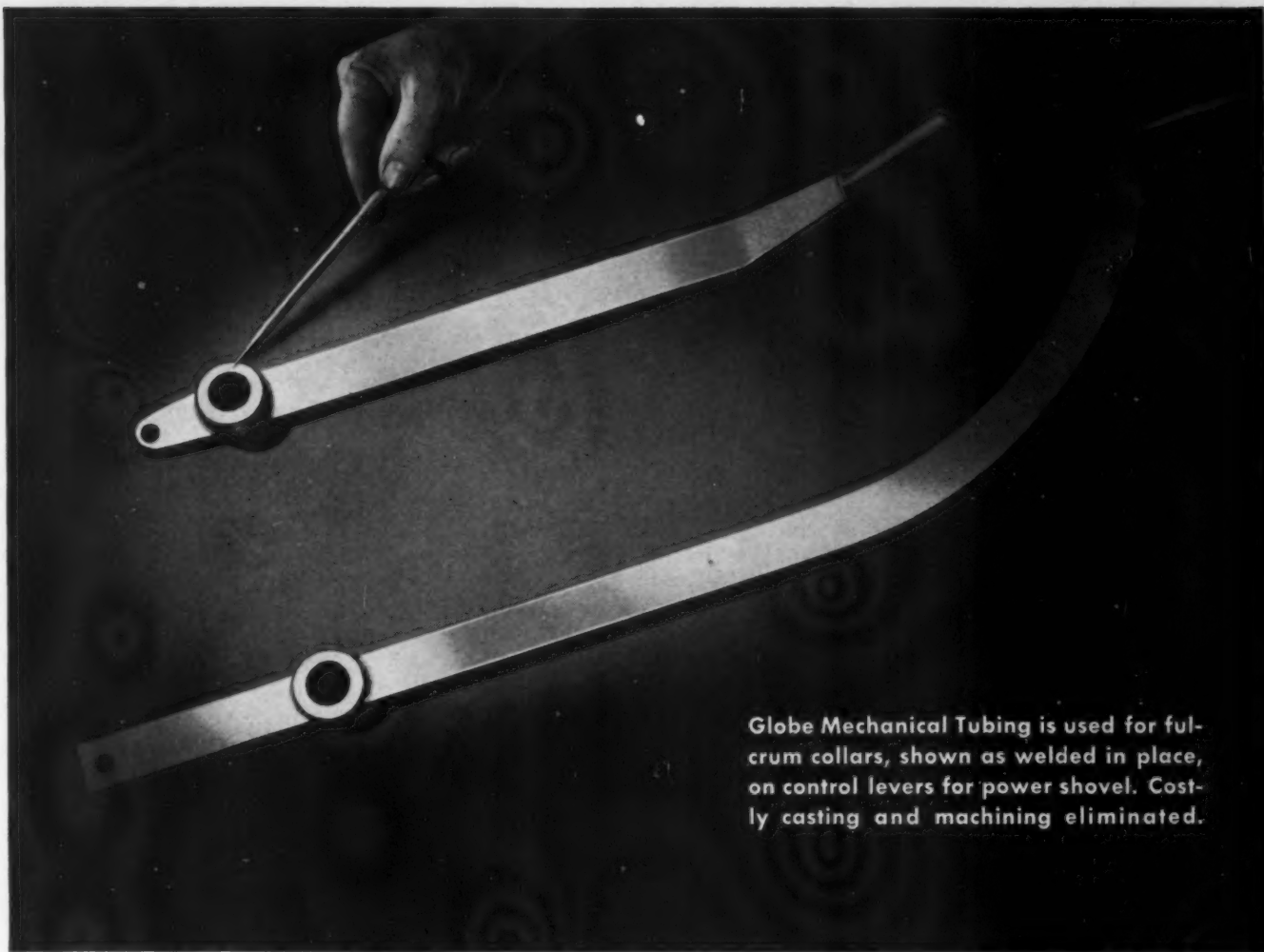
ing, shape, rip, bevel rip, tongue and groove, rabbet and plough on the machine. Each of the operations can be run continuously and without fear of the material being scarred or chipped by the cutter head. The unit can be easily swung out of position when not required. This allows the models to be used for cross-cutting, mitering, cross-dadoing and sanding and all other operations possible on a standard DeWalt machine. Details from DeWalt, Inc., Dept. P-128, Lancaster, Pa.

No. 109 — Use Coupon on Page 130

De-Humidifier for Industrial Areas

A de-humidifier similar to that used by the Navy in "mothballing" the fleet has been adapted for industrial use by the Dryomatic Corp., Alexandria, Va. The Model 100 is capable of de-humidifying a storage area of approximately 25,000 cubic feet. Area of de-humidification is virtually limitless when the machines are used in combination. The units can bring relative humidity down to 5% when necessary, or dry enough for the most exacting laboratory conditions. The machine is portable and requires no structural changes in the building. It operates on a 110 volt, 60 cycle a-c current, on a 10 amp. fuse. It is completely automatic and requires no maintenance except some oil every 6 months. It can operate at low temperatures.

No. 110 — Use Coupon on Page 130
(Please turn to page 134)



Globe Mechanical Tubing is used for fulcrum collars, shown as welded in place, on control levers for power shovel. Costly casting and machining eliminated.

Photo: Courtesy of BOEHRINGER ENGINEERING PRODUCTS, MILWAUKEE

DESIGN to cut production time and costs

DESIGN with Globe Mechanical Tubing

A Versatile Engineering Material . . . Globe Mechanical Tubing is a semi-finished material for the making of structural parts — bracers — rods — spacers — sleeves — pins — bushings — struts — frames — housings — spindles — rollers — shafts — cylinders — containers — slide-ways — rings — bearing races — a variety of tubular sections.

Look to Globe Mechanical Tubing when you are looking for ways and means to cut costs — to simplify production — and improve product design and performance as well.

Here is a versatile engineering material offering many advantages: inherent structural strength — minimum weight — dimensional accuracy — the reduction or elimination of many machining oper-

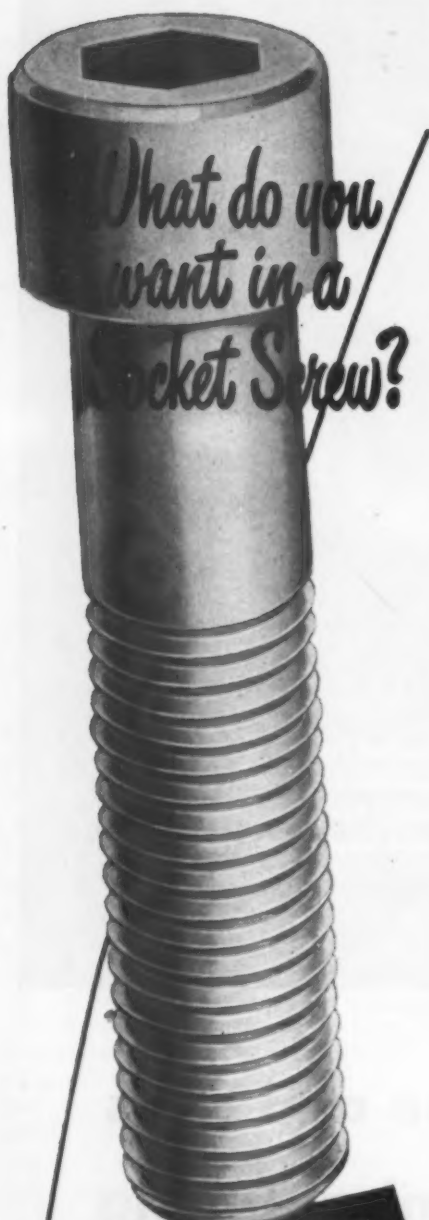
ations — less time-demand and wear and tear on machine and cutting tools.

We welcome an opportunity to work with you to explore the possibilities of Globe Mechanical Tubing for your products — write —

Globe Steel Tubes Co., Milwaukee 4, Wis.

Seamless Stainless Steel Tubes
Gloweld Welded Stainless Steel Tubes
Carbon-Alloy-Seamless Steel Tubes
Globeiron Seamless High Purity Ingot Iron Tubes
Globe Welding Fittings





B-RIGHT-ON
has it!

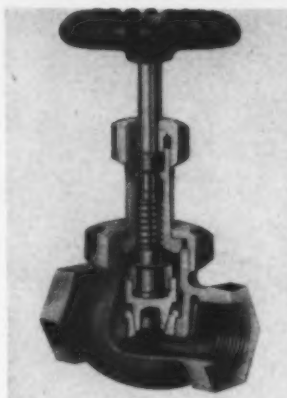
- Special Alloy Steel
- Fine Compact Grain
- Accurate Forming
- Uniform Quality
- Great Strength
- Right Temper
- Smooth Finish
- Close Tolerances

You'll find all the features
you're looking for in Brighton
Socket Screw Products.

Get the facts on Brighton Nu-
Process and Uni-Quality! See your
nearest mill supply house or write
for detailed catalog.

BRIGHTON
SCREW & MANUFACTURING CO.
18-29 Reading Road

Bronze Globe Valve Offers Precise Control



The Fairbanks Company, 393 Lafayette St., New York 3, N. Y., completes its line of "Micro Control" valves with the Fig. 0525 150-lb. bronze globe valve, featuring precise control and durability. Stainless steel plug disc and seat are heat-treated to a hardness of 500 Brinell. The disc and seat are manufactured as a unit, precision-ground for close control of flow and perfect seating. They may be reground, and replacement discs and seats are available in matched sets. Resistance to corrosion, wire drawing or damage due to solid particles in the fluid flow contributes to the long life expectancy of the valves. The Micro-Control series now covers the 150, 200 and 300 lb. classes of valves.

No. 111 — Use Coupon on Page 130

Device Permits Tying Loads to More Than 16 Ft.



New storage space is now available to industrial concerns. Standard 83" overall height telescopic lift trucks can "reach for the sky" and tier loads in greater than 16' stacks with a development of the Philadelphia Division, Yale & Towne Manufacturing Co. The new device consists of an extra set of

front channels and an additional lifting cylinder. The channels are hung directly in front of the regular telescopic channels and are operated by a separate control. This extra attachment can be quickly removed for normal fork truck operation. In other respects, trucks equipped with the device are standard Yale gasoline or electric trucks. Further details from Yale & Towne at 11000 Roosevelt Blvd., Philadelphia 15, Pa.

No. 112 — Use Coupon on Page 130

Low-Cost Industrial Oven



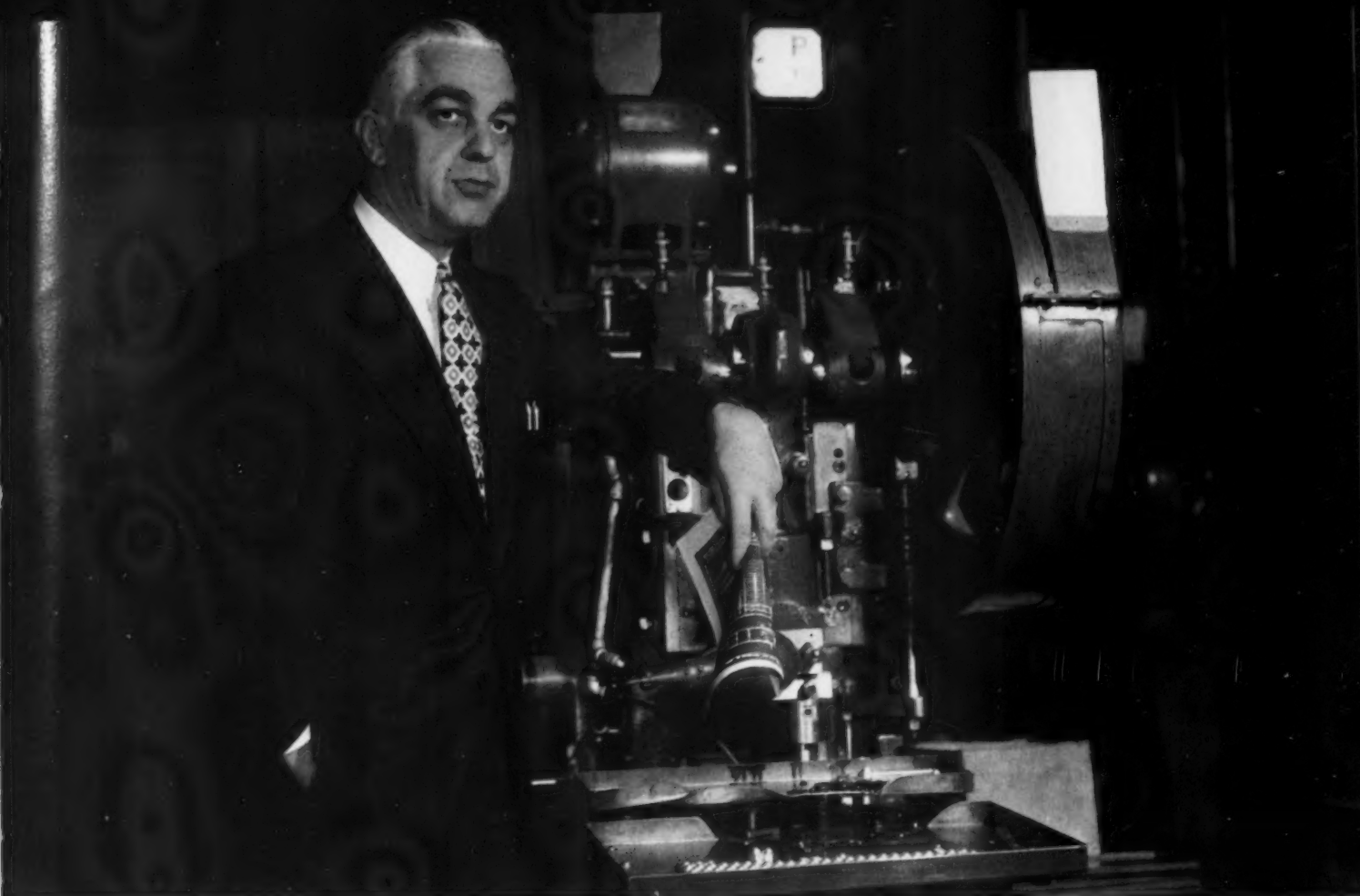
This low-priced portable electric oven, made by Grieve-Hendry Co., Inc., 1101 N. Paulina St., Chicago, Ill., is suited for numerous industrial uses. Among them: baking enamels, lacquer, wrinkles and other finishes; dehydrating coil forms, paper tubing, bobbins; drying plastic granules and parts after cleaning; preheating molds, etc. Uniform temperature is maintained throughout. One oven will nest on top of another. They can be used in groups and can be operated as individual ovens, or selected ovens in the group can be cut out or heated at different temperatures. Size is 29" wide, 24" deep, 20½" high, inside.

No. 113 — Use Coupon on Page 130

Diamond Abrasive Belts Last 20 Times Longer

Hartford Special Machinery, Hartford 12, Conn., has developed a new diamond abrasive belt said to have outlasted other diamond belts by as many as 20 times. For use on carbide dies from ¼" to 9" I.D., the belts are made of solid nylon impregnated with diamond abrasive in grades from 1-5 microns to a sieve or mesh size of 100. The resilience of nylon provides a cushioning effect against shock and prevents the diamond chips from tearing out of their sockets. The belts can be cleaned by washing in warm soap and water. They are impervious to oil, allowing the use of light oil as a coolant.

No. 114 — Use Coupon on Page 130
(Please turn to page 139)

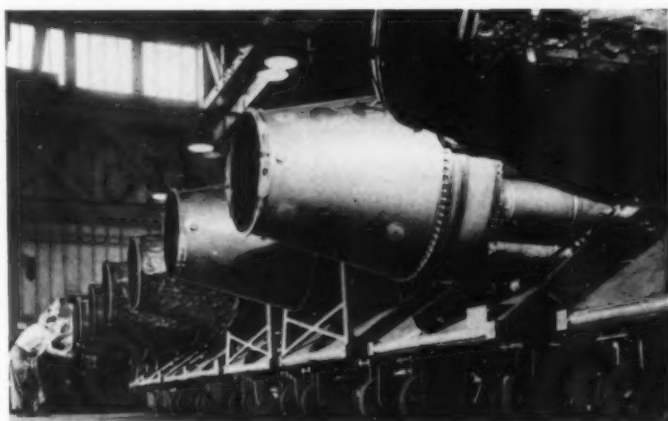


FRED A. HOFMANN, production vice president of the Elastic Stop Nut Corporation of America, says, "We're back on a full 2-shift production schedule, and practically every one of the 62 Tri-Clad motors we've installed since 1941 in our plant at Union,

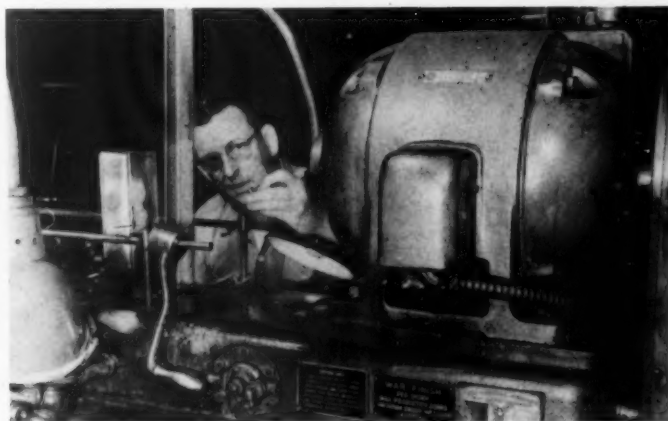
N. J., is going night and day. Sure, we make a lot of steel products, but for a general-purpose motor, we don't think you can beat cast iron. After the pounding we've given our Tri-Clad motors for the past 10 years, we're stronger than ever for Tri-Clads."

ELASTIC STOP NUT CORPORATION:

"We're stronger than ever for Tri-Clad triple protection!"

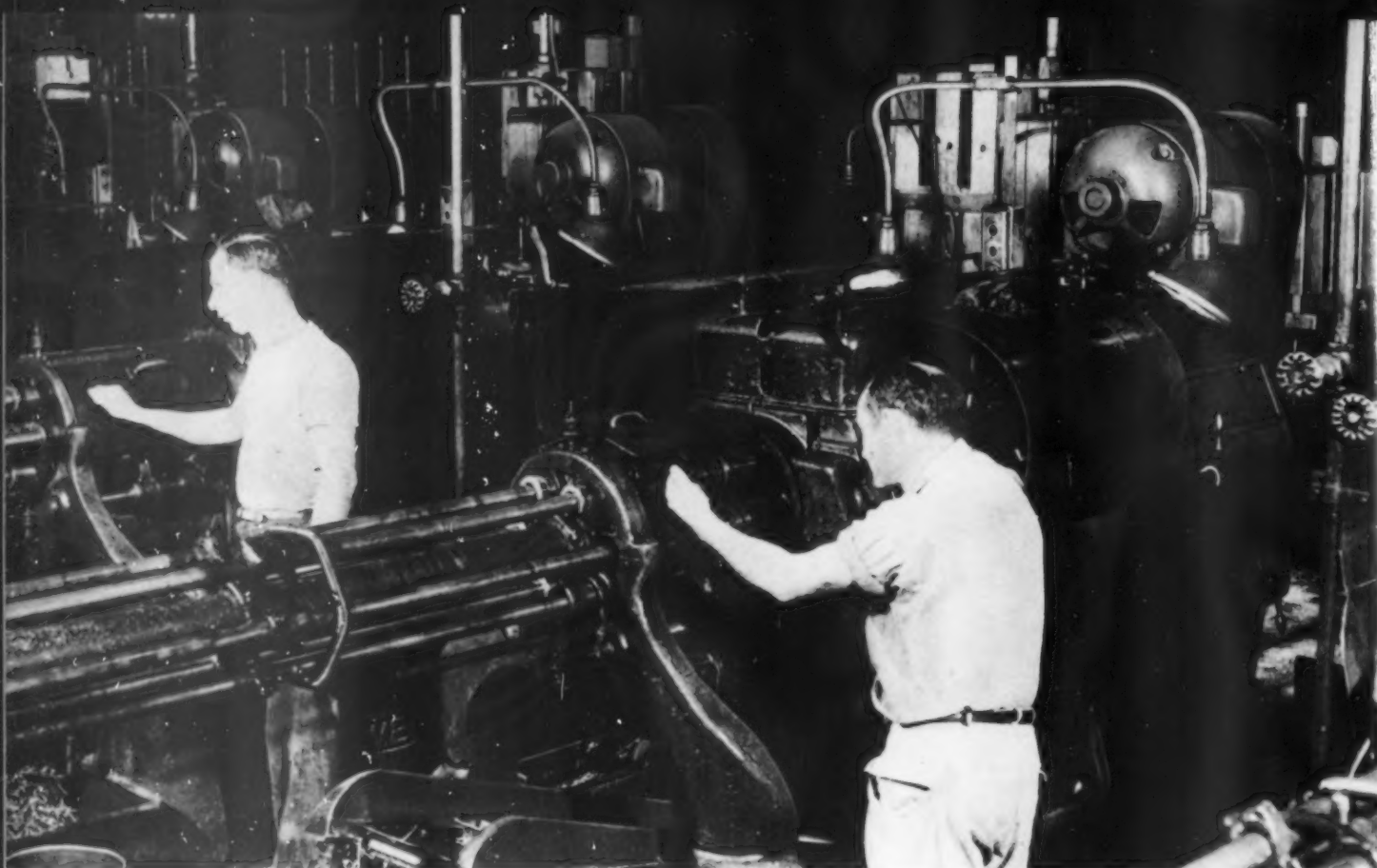


TRI-CLAD MOTORS drive machines that produce ESNA fasteners for use on jet aircraft engines—the engines that power our modern military planes. Each of the jet engines above uses a large number of these special stainless-steel high-temperature nuts, designed to hold under the extreme heat and other severe conditions of jet-engine operation. Moreover, these nuts must be re-usable without seizing or galling the finish. ESNA counts on the reliability of their Tri-Clads to help turn out thousands of these fasteners every day.



VIRILE VETERAN. This 10-hp Tri-Clad motor has been driving an Acme Gridley multiple spindle bar machine for nearly 10 years. It's still going strong, another reason why, after 10 years, ESNA thinks Tri-Clad is still their best motor buy! And today's Tri-Clad motor, all-industry favorite, is better than ever! ➡

GENERAL  ELECTRIC



4 STEPS—AND NO HANDS! Backbone of the ESNA production line, the Acme Gridley automatic bar machine (3 shown above) ejects a finished nut blank every $4\frac{1}{2}$ seconds. The operator simply keeps the six spindles supplied with bar stock. The machine feeds stock, machines the nut profile, drills 2 holes and cuts off to ac-

curate lengths. The load on the 10-hp drive motor is heavy and constant—but Tri-Clad, with its bearings completely enclosed in cast-iron housings, can take it! Maintenance department can't recall a single Tri-Clad bearing ever having to be replaced. Moreover, if they need it, the motors are easily greased while running.



TRI-CLAD MOTORS
REG. U.S. PAT. OFF.

**Help Keep ESNA
Production Up!**

PRODUCTION PUSHER General plant foreman Karl Kjellburg has the job of meeting "impossible" defense program manufacturing schedules. He's counting heavily on automatically fed machines like the Tri-Clad driven V. & O. press on his left; says, "This press inserts over 200 elastic fibre locking collars a minute in a $\frac{3}{8}$ " fastener. Driving it is a big job for a motor. Our Tri-Clads gave us no trouble during the war. We're counting on them again!"





TROUBLE SHOOTER TESTIFIES Ed Conk, ESNA's maintenance chief, must furnish reliable power wherever it's needed in the plant. He's got some definite ideas about electric motors; says, "We like a motor you can regrease easily *if you have to*. So far, we've had to regrease very few of our Tri-Clad motors. And those were either on hot spots or on particularly tough jobs. The point is—we *could* readily have regreased them all if it was necessary."



TOUGHEST... on the inside Extra protection against electrical breakdown is built into every Tri-Clad motor. Formex® wire windings, one-piece cast-aluminum rotor, double-end ventilation—these are features that prolong a general purpose motor's useful life.

TOUGHEST... on the outside Teeth rattling blows, dripping liquids, corrosive fumes—they're all in a day's work for Tri-Clad cast-iron construction. You get a rigid structure, too—one that won't twist out of line when you're bolting it down.

TOUGHEST... at the bearings A Tri-Clad motor will run safely without relubrication for as long as any general purpose motor you can buy. But, if the application does make relubrication a "must", you can grease your Tri-Clad without halting production.

* Reg. U.S. Pat. Off.

How to Keep Your Motors in Shape for the Job Ahead!



TIMELY READING With every electric motor needed on the line, once again it's time to be a crank about motor care. That's why every motor user needs this General Electric manual. Tells how to spot motor and generator trouble before it happens, how to prevent serious breakdown, how to conduct a regular motor maintenance program. Order a copy for your maintenance department today! Use the coupon!

General Electric Company
Section 752-8
Schenectady 5, New York

Please send me my free copy of "How To Maintain Motors and Generators" (GET-1202)

Name

Company

Address

City State

GENERAL  ELECTRIC

You'll find some worthwhile information on
motor control on the next page ➡

“...NO SHUTDOWNS DUE TO STARTER FAILURE!”

**Here's a tip on real motor-starter
dependability from a
leather-processing plant executive**

As chief engineer of a leather-processing plant, it's Mr. Arthur B. Sullivan's job to keep electrical equipment throughout the plant running smoothly. So it's a safe bet he knows what he's talking about when it comes to motor-starter dependability.

Says Mr. Sullivan: "When a motor drive won't start because its motor starter fails, we're tied up until it's fixed. We lose output and, if it's a continuous processing line our rejects may be high.

"Because of this, we've had to compare starter against starter. We haven't found one that beats this G-E starter. Since installing it, we've had practically no shutdowns due to faulty starting. What's more, this G-E starter is easier to install and service. We're sold on it!"

MAKE SURE YOUR PLANT ELECTRICIAN KNOWS ABOUT THESE G-E STARTER FEATURES:

For Longer Life

Fine silver contacts, "Strongbox" Magnet Coil, "molded-in" coil lubricant.

For Easier Maintenance

A screwdriver is the only tool needed for servicing. All terminals are "up front".

For Greater Flexibility

Contacts that are easily changed from normally open to normally closed.

For details on the full line of G-E magnetic motor starters, write for Bulletin GEA-5153. Manual starters for infrequent starting operations are described in Bulletin GEA-1522. For pricing and shipping data, phone or write your G-E representative or authorized G-E distributor. Section A730-21, Apparatus Dept., General Electric Company, Schenectady 5, N. Y.



Herman F. Zoll, Purchasing Agent and Arthur B. Sullivan, Chief Engineer of John R. Evans & Co. inspect the G-E motor starter that is giving motors throughout their plant the reliable control and protection needed to keep output up, rejects down.

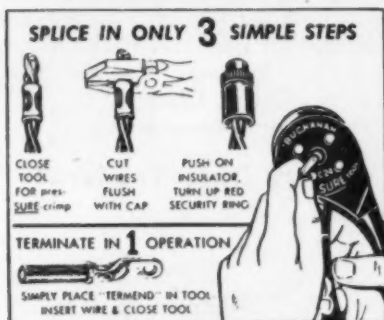


Martin Kelly, Evans Co. Plant Electrician, removes arc on G-E motor starter that isolates and protects each contact in its own chamber.

GENERAL  **ELECTRIC**

730-21

Splice Caps Easily Installed, Inspected



Buchanan splice caps for "pig-tail" splicing of electrical wires now have an open-end construction which greatly facilitate their installation and inspection. They insure that wire insulation is always flush with the splice cap for maximum circuit protection, and that wires are always inserted to the full depth of the cap for maximum joint efficiency. Only two sizes of splice caps are required for all most frequently used combinations of two or more wires ranging from two #18 to three #8. The hand operated tool which installs both sizes features four-way pressure crimping. It insures permanent connections of maximum electrical and mechanical efficiency. Buchanan Electrical Products Co. is at 1290 Central Ave., Hillside, N. J.

No. 115 — Use Coupon on Page 130

Space Saving Oscilloscope



Model 476 Mirroscope is a new type of oscilloscope designed to save space on the testing bench. The 5" cathode ray tube is mounted in a vertical position. This construction reduces bench requirements to an area of only 9" x 8". The cathode ray image is reflected from a high grade mirror mounted in the adjustable cover at top of the cabinet. Thus the viewing surface is brought near the eye level

(Please turn to page 140)



"The eye of the master will do more work than both his hands."

—Ben Franklin's Almanac, 1757

Touring thy plant with a critical eye can do more for the health of thy business than a trip to Washington.

—Acme Steel Notebook, 1951



5 things you can do to keep your Acme Steel Strapping Tools on the job:

1. Clean and oil every week.
2. Check and clean gripping dogs weekly. Replace when teeth are worn.
3. Detect worn punches and jaws early by checking sealed joints regularly. If in doubt, submit samples, identified by model and serial number, to Customer Service Department, Acme Steel Company.
4. Keep parts list and supply of spare parts handy to make minor repairs. Additional parts lists supplied upon request.
5. Ask us about the Acme Steel "3-WAY SERVICE PLAN" for equipment repairs.

Your management eye needs to be a dozen places at once these days—on supplies, on production, on deliveries, and all over your plant to keep efficiency high and morale up.

Your Acme Steel representative is ready to help bring you greater thrift in the use of Acme Steel's flat steel strapping and stitching wire in your packaging, shipping, and materials handling operations. He may be able to suggest more efficient ways to use Acme Steel products and accessories to improve your use of the available supply.

In spite of an increase in productive capacity, U. S. military requirements for some products make it impossible for Acme Steel to meet all the demands of the 50,000 customers, representing nearly every American industry, in these rearming times. But Acme Steel tries to help in every way we can—we always have for more than 70 years.

Information for ready reference on Acme Steel products is available upon request.

ACME STEEL COMPANY

Dept. P-41, 2838 Archer Avenue, Chicago 8, Illinois

To contact the nearest of our 46 Service Offices in the United States and Canada, check your telephone directory, or write us.



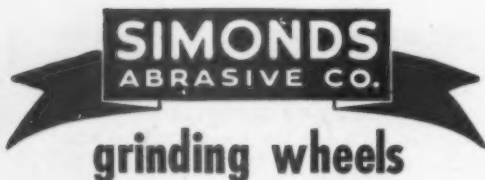
Acme Steel Company has enjoyed sound, steady growth under the American business system of open competition. Since 1901 we have made 286 consecutive dividend payments to our stockholders.

ACME STEELSTRAP flat steel strapping and ACME UNIT-LOAD carload bracing BAND, SEALS and TOOLS • ACME SILVERSTITCHERS and ACME SILVERSTITCH WIRE for box stitching • ACME-MORRISON METAL STITCHERS and BOOK STITCHERS • ACME-CHAMPION BAG STITCHERS • ACME HOT AND COLD ROLLED STRIP STEEL • ACME GALVA-BOND steel slot stock for Venetian blinds • ACME STEEL SPECIALTIES, including hoops, corrugated fasteners, nail-on strapping and other container reinforcements • ACME STEEL ACCESSORIES—snips, cutters, punches, tool mounts, reel stands, coil holders, coil trays.



*"Pleased
as
PUNCH"*

No production-line bottlenecks ...and no hold-up in filling DO's since the grinding supervisor started using Simonds Abrasive Company wheels. No wonder he's pleased. You'll find plenty of satisfaction... and serviceability too... in these efficient production tools. Send now for free data book describing Simonds grinding wheels, mounted wheels and points, segments and abrasive grains... products proven in everyday industrial use... and backed by Simonds 50 years experience as a major grinding wheel manufacturer.



SIMONDS ABRASIVE CO., PHILADELPHIA 37, PA. BRANCH WAREHOUSES: CHICAGO, DETROIT, BOSTON
DISTRIBUTORS IN PRINCIPAL CITIES

Division of Simonds Saw and Steel Co., Fitchburg, Mass. Other Simonds Companies: Simonds Steel Mills, Lockport, N. Y., Simonds Canada Saw Co., Ltd., Montreal, Que. and Simonds Canada Abrasive Co., Ltd., Arvida, Que.

(Continued from page 139)

when the instrument is used on benches of normal height. Mirror and wing sides fold into the cabinet when not in use. Height is 16 $\frac{1}{4}$ ". Made by Simpson Electric Co., 5200 W. Kinzie, Chicago, Ill.

No. 116 — Use Coupon on Page 130

Heavy Duty Trailers



Three all-welded, heavy gage steel industrial trailers for heavy duty hauling are offered by Phillips Mine & Mill Supply Co., 2305 Jane St., Pittsburgh, Pa. Model TF-100 (shown) with 5-ton capacity, has solid rubber tires. It stands less than 23" high, and has four stake holes provided on each side. Model TF-300 (shown) has a 15-ton capacity. With overall height of less than 24", it has dual solid rubber-tired wheels and a removable stake near each corner. Model TFP-100 is a 5-ton capacity trailer with 16" diameter pneumatic-tired wheels for load and floor protection. With a clearance of 40 $\frac{1}{2}$ ", it has stake pockets for use when side or end stakes are required. All models are available with fifth wheel.

No. 117 — Use Coupon on Page 130

Diamond Life Up One Third In New Wheel Dresser

Anton Smit & Co., Inc., 333 W. 52nd St., New York, N. Y., is U. S. distributor for a new diamond pointed abrasive wheel dresser claimed to offer great advantages. By rotating the diamond through a sequence of 7 stations, mechanically positioned to present a sharp point to the grinding wheel at each station, the tool is said to: lengthen the life-span of the diamond more than a third; reduce diamond re-setting to as little as one tenth; improve finishes; increase productivity. Whatever the angle of approach of existing tool post or dressing fixture, the tool can be applied so that its head is in either a vertical or horizontal position. It is called the Habit Index-A-Point.

No. 118 — Use Coupon on Page 130

(Please turn to page 142)

STOP

FREE SURVEY: Place your rust problems in the hands of a RUST-OLEUM specialist. He will survey your plant for all rust problems, submit detailed recommendations, and make specific tests.

You can stop rust with RUST-OLEUM! An exclusive formula proved in a wide range of industrial and marine applications for more than 25 years. Its tough, pliable film dries to a firm rust-resisting coating that protects against rust—cuts maintenance costs—adds years of use to many metal surfaces, indoors and outdoors.

RUST-OLEUM may be applied over rusted surfaces without removing all the rust, assuring substantial savings in preparation time... It is only necessary to remove all the rust scale and loose rust.

Prompt delivery from Industrial Distributor stocks in principal cities. See *Sweets* for complete catalog and nearest source of supply, or write for complete literature on your company letter head today!

Beautifies AS IT PROTECTS

Available in many
COLORS,
aluminum and white



RUST

RUST-OLEUM CORPORATION

2431 Oakton Street, Evanston, Illinois



"Rigid Economy, Men"



Anchor Fence

**Guards
Defense Production!**

**Protects your Plant from
Snoopers, Trespassers, Troublemakers**

NOW, in these days of stepped-up defense production, it is more important than ever that you protect vital materials, products, machinery and plans with a sturdy Anchor Chain Link Fence.

Anchor Fence provides you with 'round - the - clock protection against snoopers, troublemakers, agitators . . . keeps children away from dangerous plant operations . . . helps control traffic in and out of your grounds.

Anchor's H-Beam Line Posts are self-draining, rust-resistant, rigid. Deep-driven Anchors hold the fence firmly erect and in line in any soil.

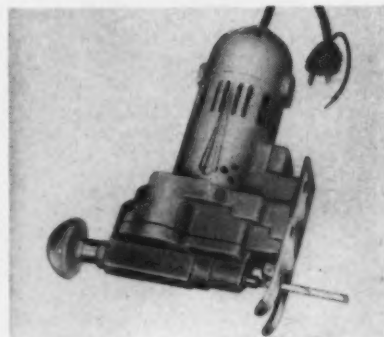
Square Frame Gates resist warping or sagging. Square Terminal Posts provide attractive appearance, extra strength and durability. These and many other Anchor features add up to really long-lasting, attractive protection for your plant!

For full information on Anchor Fence—diagrams, fencing ideas, plans, photos of installations—send for Anchor's Industrial Fence Catalog. Or ask for an experienced Anchor engineer to call and help you solve your plant protection problems. Write to: **ANCHOR POST PRODUCTS, INC., Industrial Fence Div., 6615 Eastern Ave., Baltimore 24, Md.**

Anchor Fence

Nation-wide Sales and Erecting Service

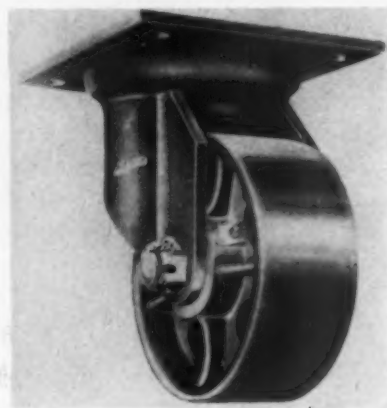
Multi-Purpose Cutting Tool



Forsberg Mfg. Co., Bridgeport, Conn., has brought out a larger model of its Whiz Saw which will cut wood, fibre, bone and composition materials up to 2" thick. When equipped with a high speed blade it will cut light gage metals. Known as Model No. 2, the tool can be used as a rip, cross cut or scroll saw. Weighing only 6¾ lbs., it is safe and easy to handle. Furnished complete with 2 extra blades.

No. 119 — Use Coupon on Page 130

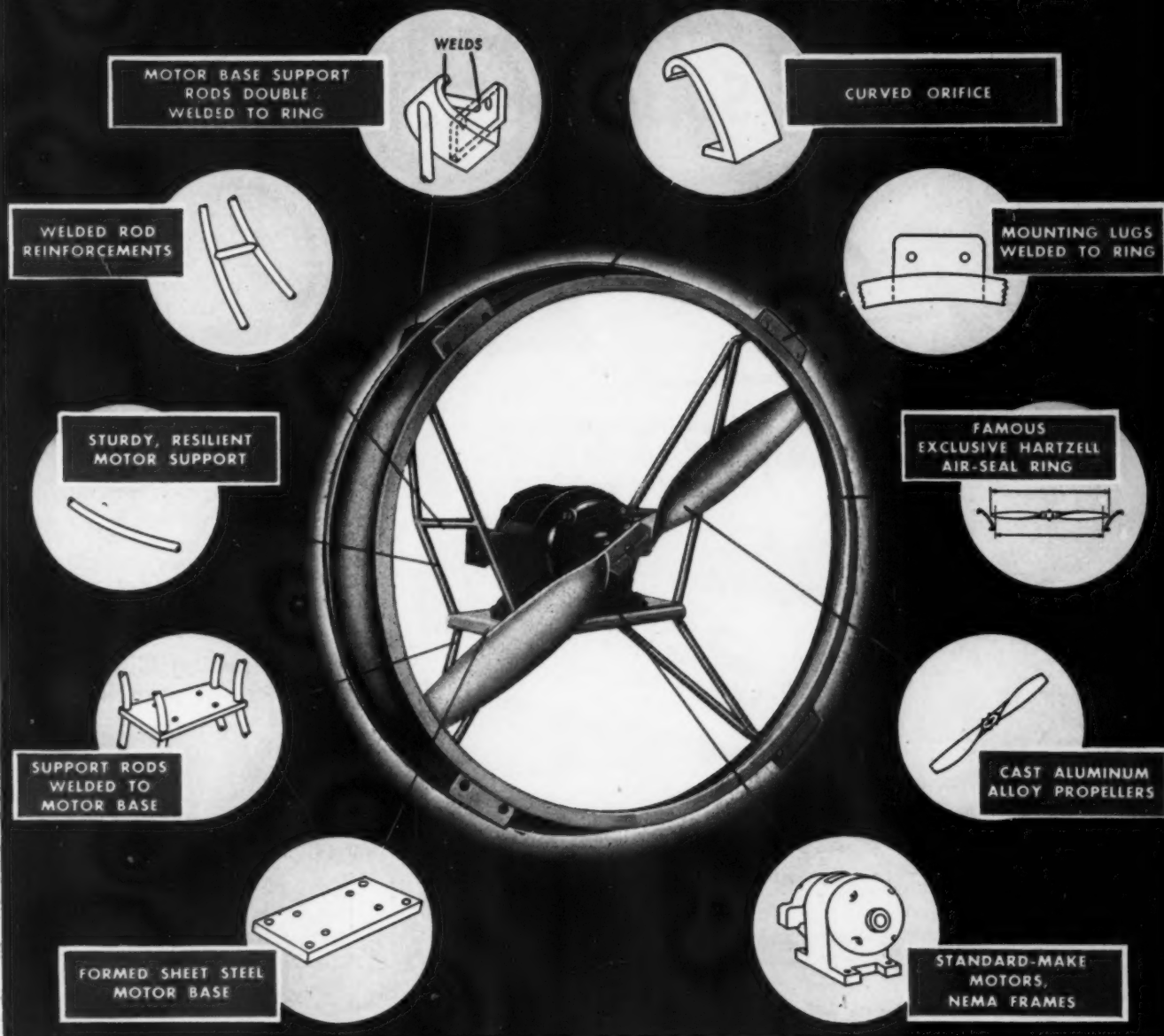
Heavy Duty Casters Feature Easy Operation



Easy operation is featured in new heavy duty structural steel swivel and rigid casters introduced by Bond Foundry & Machine Co., Manheim, Pa. Wheels in both series (40-A-MH, Swivel, illustrated, and 41-A-MH, Rigid) have roller bearings revolving on hardened and ground steel sleeves and are pressure lubricated throughout. Swivel casters have hardened ball races to absorb shock and eliminate king bolt strain. Both series, in 5", 6", 8" and 10" wheel diameters, are made of even thicknesses of heavy steel uniformly shaped to give added strength and rigidity. Available with roller bearing semi-steel, vulcanized on soft or hard rubber tread, and Celoron wheels.

No. 120 — Use Coupon on Page 130
(Please turn to page 144)

Only HARTZELL Fans Give You ALL These Advantages



If purchase price is an important factor — and it is — in the procurement of industrial fans and blowers, check Hartzell initial costs before you buy. If you give weight to cost of performance — air per power dollar, installation time and cost, maintenance and freedom from outages — you'll find that reasonable first cost doesn't necessarily mean excessive operation cost. Above are shown some of the reasons why Hartzell

fans and blowers stand up in rugged industrial service. They are designed and built for industry. They cover your full range of needs, too — every good type and size. Only Hartzell, for instance, makes a 22-foot fan, moving 1,250,000 feet of air per minute. Write, or send the coupon below, for the big Hartzell catalog. And remember, there's a direct-factory representative near you to serve you quickly and intelligently.

HARTZELL
PROPELLER FAN CO.
DIV. OF CASTLE HILLS CORP.
PIQUA DEPT. D OHIO

HARTZELL PROPELLER FAN COMPANY —

Send me your catalog, which contains useful air-movement information and installation suggestions.

NAME _____
COMPANY _____
STREET AND NO. _____
CITY AND STATE _____

PROPELLER-TYPE FANS AND BLOWERS—ROOF VENTILATORS—UNIT HEATERS • ENGINEERING OFFICES IN PRINCIPAL CITIES

5 Reasons why ONE Grating is Superior



1 Rigid one-piece construction . . . easy to install.



2 Maximum open area for light and air.



3 Easy to paint . . . all surfaces accessible.



4 Non-slip Twisted Cross-Bar.



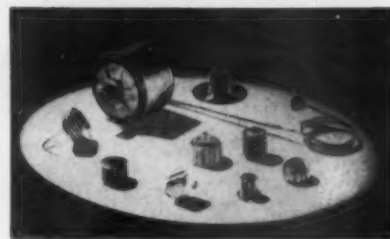
5 Self-cleaning . . . no sharp corners to clog.

BLAW-KNOX *Electroforged* STEEL GRATING

BLAW-KNOX DIVISION OF BLAW-KNOX COMPANY
2075 Farmers Bank Bldg., Pittsburgh 22, Pa.
Offices in Principal Cities

WRITE FOR BULLETIN 2365

Flexon Bellows In All Sizes and Metals



Chicago Metal Hose Corporation, 1316 S. Maywood Ave., Maywood, Ill., offers its Flexon bellows in a complete range of sizes and metals. They are made in brass, stainless steel, bronze, monel and inconel in single and multiple ply construction and in various lengths. The bellows, which are especially suited to applications of control devices and instrumentation, can be provided with a variety of fittings to meet specifications. Many types of attachments can be furnished such as electrical circular seam welding of fittings to stainless steel bellows to provide uni-metal assemblies. Catalog CMH-113 available.

No. 121 — Use Coupon on Page 130

Bundling Chain Locks Automatically



American Chain Division, American Chain & Cable Co., Bridgeport, Conn., has a new idea for bundling materials for storage—a bundling chain with automatic lock. Pins, pear shaped links, and wires are no longer necessary for binding. The chain with automatic lock permits the bundles to be stored indefinitely and held securely. The lock is available as a separate unit or as part of a chain assembly. It is now being made for 17/32", 9/16", 5/8" and 21/32" chain. Chain assemblies and locks can be furnished with regular wrought iron, low carbon, high test or alloy chain.

No. 122 — Use Coupon on Page 130
(Please turn to page 146)

One way to buy bags and the right way



*What I require
when buying bags...*

1. Strength and good looks..
2. Sharp printing..
3. Technically trained
bag salesman ..
4. Dependable source
with long experience
5. Bags designed to my product
to increase sales!

"By Rule of Thumb" may do for some decisions. When buying bags, however, thought should be given to this important purchase. You'll want the container that protects your product... that is designed for your product... that assures the best acceptance of your product. Call in your Chase Salesman. He's technically trained to analyze your requirements. He's supported by more than a century of experience in providing bags for American industry and agriculture.



BAGS FOR ALL INDUSTRY AND AGRICULTURE

Topmill burlap bags • Saxolin open mesh bags • Paper and Multiwall bags • Cotton bags of all kinds • Combination bags, liners and specialties

for Better Bags... Better Buy Chase

CHASE BAG CO. GENERAL SALES OFFICES: 309 W. JACKSON BLVD., CHICAGO 6, ILL.

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MEMPHIS • BUFFALO • ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE
PITTSBURGH • KANSAS CITY • LOS ANGELES • MINNEAPOLIS • GOSHEN, IND. • PHILADELPHIA • NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY
OKLAHOMA CITY • PORTLAND, ORE. • REIDSVILLE, N. C. • HARLINGEN, TEXAS • CHAGRIN FALLS, O. • WORCESTER, MASS. • CROSSETT, ARK. • SAN FRANCISCO

APRIL, 1951

Please mention **PURCHASING** Magazine when writing to advertisers.

145

SURPRISING SAVINGS

Reported by Users of
**STANDARD PNEUMATIC
TUBE SYSTEMS**

SAFE — SWIFT DELIVERY BY "AIR" OF MESSAGES — MONEY — MERCHANDISE!

Savings as high as \$10,000 in 9 months' time are reported by users of Standard Pneumatic Tube Systems — filling orders, moving merchandise, money, messages, records, between departments. Reduce messenger and telephone service. Can be installed for a wide range



of needs in stores, warehouses, manufacturing plants, offices. Write for Bulletin No. 11 and complete information — address Dept. P-120.

STANDARD CONVEYOR COMPANY
North St. Paul 9, Minn.



Write for
Bulletin No. 11
— Standard
Pneumatic Tube
Systems. Address
Dept. P-41



EVERY SHIPMENT BECOMES **FAST FREIGHT**

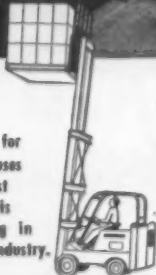


**WITH TOWMOTOR
MH***

SWIFT MOVEMENT OF MATERIALS, the greatest single step to increased productive output, results when Towmotor Mass Handling makes "fast freight" of every shipment in thousands of America's leading plants. Towmotor operation assures record-breaking speed in unloading car-

loads of materials, and fast in-plant movement of heavy loads. Write for folders describing the Towmotor line and Special Engineering features. **TOWMOTOR CORPORATION**, Division 11, 1226 E. 152nd Street, Cleveland 10, Ohio. Representatives in principal cities in U. S. and Canada.

MH* for
warehouses
and fast
materials
handling in
every industry.



*MH is Mass Handling—systematic movement of the most units in the shortest time at lower cost.



FORK LIFT TRUCKS and TRACTORS

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

Identification Equipment Meets Defense Requirements

If photographic identification of your employees and plant visitors is required by the Department of Defense, Graflex, Inc., Rochester 8, N. Y., can supply you with equipment for making pass cards and buttons. An all-in-one unit consists of camera, lights, numbering device, and adjustable background on a sturdy stand. It turns out up to 400 identification pictures per hour on 35 mm film. Negatives, which are 1" x 1 3/8", may be printed by contact on all-photographic passcards, made into prints for tamper-proof badges and personnel records, or enlarged for other purposes. No skill is required for operation—focus, lighting and exposure are standardized.

No. 123 — Use Coupon on Page 130

Head Stitcher



Stitching long cartons after putting the contents in has always been a headache. Diagraph-Bradley Industries, Inc., says it has licked the problem with the Young horizontal inverted head stitcher. The cartons used with it ordinarily come with a full overlap on each end. The carton to be stitched is laid flat on the table (any height), and the full overlap flaps are folded over the thin narrow clincher arm which extends from the machine. The carton is then slid under the head of the machine and stitched. Because the carton lays flat on the table, it can be squared up easily and the flaps folded tight. The company's address is Herrin, Ill.

No. 124 — Use Coupon on Page 130
(Please turn to page 148)

UDYLITE EQUIPMENT

stars in
T.V. PRODUCTION



This Udylite Plating Machine is used for applying finish to television receiver components at the plant of Motorola, Inc.

Motorola, Inc., one of the nation's leading manufacturers of television receivers, chose Udylite equipment to speed production and reduce plating costs. Motorola uses a Udylite Full Automatic Plating Machine to apply a protective finish to many small parts—vital to the efficient performance of a television set.

Motorola's engineers are quick to point out the economy and efficiency offered by Udylite automatic plating equipment. Mr. Hank Mirrow, head of the plating department, says: "The Udylite Machine has been a great aid in processing and in conserving manpower in our plant. The machine has given us excellent service and has proved to



be a necessity in our manufacturing operations." You can receive these same benefits for your plant with Udylite methods and machines. Udylite offers a complete range of plating and metal finishing equipment for all plants—all products. Engineers are available for consultation with you—at your convenience—concerning your specific requirements. Call your nearby Udylite Technical Man today and let him give you the complete story of Udylite's facilities and services to better your plating operations. Or write The Udylite Corporation, Detroit 11, Michigan, for full details. There's no obligation.

THE
Udylite

CORPORATION
DETROIT 11, MICHIGAN

PIONEER OF A BETTER WAY IN PLATING

Over Half of America's Top Rated Companies

USE
Speed Sweep

THE BRUSH WITH THE STEEL BACK

Sweeps Cleaner,
Faster, Easier.
Outlasts Ordinary
Brushes 3 to 1

Speed Sweep has become the No. 1 sweeping tool of American industry — used by over 50,000 firms. It is the only brush that is specially designed to do a thorough sweeping job with less effort. It is also the only brush that is constructed to outlast ordinary brushes. Whether you use a few or a lot of brushes, you'll find it pays to use Speed Sweep.

Mail the handy coupon today.



Milwaukee Dustless Brush Co.

530 North 22nd St., Milwaukee 3, Wis.

Send complete facts about Speed Sweep.

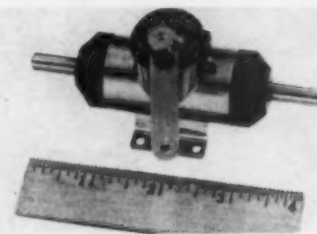
NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

DATE _____

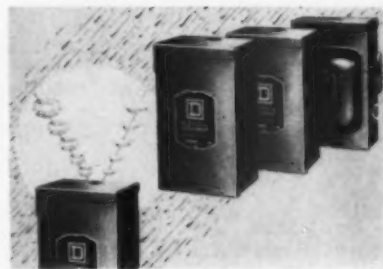
Lever Adjustment For Miniature Speed Drive



Metron Instrument Co., 432 Lincoln St., Denver, Colo., has made available a miniature variable speed drive with lever type speed control. Called the 4B, it has advantages in applications requiring remote or automatic control. By applying linkages, or cams, a wide variety of control techniques is possible. Applications include timers, recorders, controllers, indicating mechanisms, etc. The unit is also suitable for military applications where severe ambient conditions are encountered. It has ratings up to 2-pound-inches of torque, 0.025 hp, 20,000 rpm, and the ratio is infinitely variable from 1/6 to 6.

No. 125 — Use Coupon on Page 130

Interchangeable Hubs Provide Flexibility



Square D Company, 6060 Rivard St., Detroit 11, Michigan, has simplified stocking of raintight equipment with interchangeable hubs on circuit breakers, Multi-breakers, switches and fusible entrance equipment. Immediate delivery of required hub size can be made from distributors' shelves. The galvanized outdoor device has an extruded top which is threaded for the die-cast interchangeable hub. The correct size of hub for the conduit is selected and screwed into the top endwall. The design assures an electrical bond and watertight joint. When no hub is required, a similar die cast closing cap may be inserted which completely seals the opening. The hubs may also be used in other equipment by cutting a hole and using an adapter nut as a lock nut.

No. 126 — Use Coupon on Page 130

(Please turn to page 150)

NATIONAL ELECTRIC IPI* BUS

Saves You Money!

*Industrial Plug-In Bus for Electrical Distribution

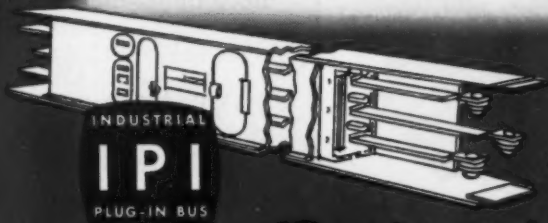
This man is reaching overhead to **plug in** additional production machinery to the electrical distribution system. Below him all the other machines in the line *continue running*. Because his plant has N.E. Industrial **Plug-In Bus**, motorized equipment can be added or removed any time *without shutting down the production line!* The Plug-In device he is holding was connected to the machine before being brought into position.

Besides permitting production to roll ahead while equipment is being changed *IPI Bus* saves

you money in other ways:

1. Eliminates the necessity of distribution panelboards.
2. Every foot of the distribution system is usable—machines can be plugged in anywhere along the busway.
3. It is self-contained and 100% salvable.

Let us assist you in determining how this efficient distribution system can best be installed to meet your requirements. Call our nearest sales office, or write for additional information and literature on IPI Bus.



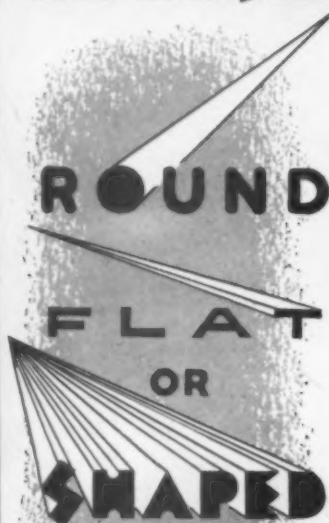
Everything in wiring points to NE

National Electric
PRODUCTS CORPORATION

1351 CHAMBER OF COMMERCE BUILDING
PITTSBURGH 19, PA.



PAGE WIRE



LOW CARBON
HIGH CARBON
STAINLESS
SPECIAL ALLOY
ARMCO IRON

You draw the Shape
—Page can draw
the Wire

—the way you want it
for your production—whether
it's ALL of your product,
or only a part.
Cross-sectional areas up
to .250" square; widths to $\frac{3}{8}$ ";
width-to-thickness ratio
not exceeding 6 to 1.

for Wire or
Information about Wire—

*Get in touch
with Page!*

ACCO

Monessen, Pa., Atlanta, Chicago,
Denver, Detroit, Los Angeles,
New York, Philadelphia, Portland,
San Francisco, Bridgeport, Conn.

PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

Faster Packaging With Hand Rotary Heat Sealer



Pack-Rite Machines, 714 W. Wisconsin Ave., Milwaukee 1, Wis., says its new continuous hand rotary heat sealer provides faster, easier, and more accurate hand-sealing of military and export packaging. Bags, barriers, pouches or innerliners made of heavier rigid material such as scrim-backed or kraft-backed foil, polyethylene, vinyls, etc., can be sealed with a continuous and rotary forward operation. An excellent 1" wide heat seal is made, allowing space for a short tear-back for inspection.

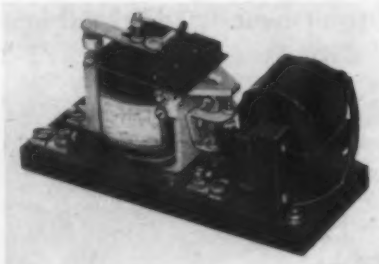
No. 127 — Use Coupon on Page 130

Machine Cleans Filters Faster, With Less Work

Permanent type filter elements used in air conditioning systems can be cleaned faster and with less work than by ordinary methods with a new washer-oiler produced by Paxton-Mitchell Co., 27th & Martha Sts., Omaha, Neb. The machine is being used successfully by railroads for cleaning air filters on diesel locomotives and passenger cars, which are the same type used in many air conditioning and ventilation installations. One man working at a normal rate of speed can clean 600 or more $19\frac{1}{2}$ " x $19\frac{1}{2}$ " x $2\frac{1}{8}$ " size filters in an 8-hour day. Using old fashioned methods the job would take four or five men.

No. 128 — Use Coupon on Page 130

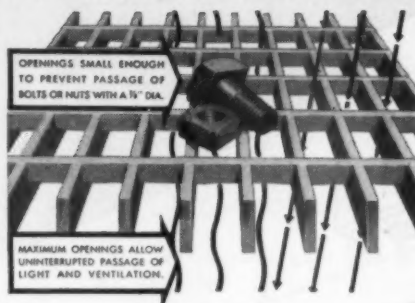
Chatter-Free Relays



Bulletin 401 a-c voltage sensitive relays—power type, now in the Ward Leonard Electric Co. line, feature: chatter-free operation, close pick-up and drop-out settings, heavy or light duty contacts and simplified circuit. A primary application of

(Please turn to page 152)

TRI-LOK RECTANGULAR OPEN STEEL FLOORING



Tri-Lok strength is obtained by truss action through twisted cross-bar, curved in opposite directions at each bearing-bar. Standard openings in Tri-Lok Rectangular Steel Flooring are $1" \times 3\frac{3}{8}"$ —other sizes can be supplied as required.

Diagonal, or Super-Safety U-type Flooring, and stair treads of all types, are available. Bulletin KH 1140 describes the construction features of Tri-Lok Open Steel Flooring.

The Tri-Lok Company is also equipped to furnish riveted and Tri-Forge welded open steel flooring. Tri-Lok grating can be furnished in a variety of metals, including aluminum alloy, stainless steel, etc.

DRAVO CORPORATION

National Distributor for the
Tri-Lok Company
Dravo Bldg., Pittsburgh 22, Pa.
Sales Representatives
in Principal Cities



**FOR
GREATER SECURITY
FASTEN FAST WITH
CLARK FASTENERS**

**BOLTS . . . NUTS
RIVETS . . . SCREWS**
...Built right...to
hold tight—their de-
pendability has been
a recognized charac-
teristic of CLARK
FASTENERS for
close to a Century.

CLARK BROS BOLT CO.
MILDALE, CONN.

Now, more than ever before...

YOU NEED THE PROTECTION OF

WIREBOUND BOXES and CRATES

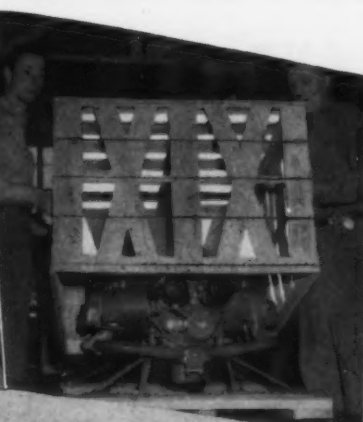
Losses due to container failure have no place in an industrial economy facing material allocations and shortages. That's why you should investigate *Wirebounds*—which combine the strength of steel with thinner wood to bring you *better product protection at lower cost*. Three hundred graduate engineers of the Wire-

bound Institute have been technically trained to design tailor-made *Wirebounds* which assure damage-free product delivery. The value of this container engineering is clearly demonstrated in the following case histories. We will be glad to show you how these benefits apply to *your* product. Use the coupon below.

YOU CAN CUT DAMAGE CLAIMS LIKE THIS:



Upside-down loading of circuit reclosers caused breakage, leakage, sometimes irreparable damage in handling and transit. Since switching to Wirebounds, company reports damage claims have become negligible.



Using Wirebounds designed to "float" 400 lb. precision engines, this manufacturer chalked up a record of 3000 shipments in fifteen months without a single instance of damage in transit due to container failure.



Flexible power saw maker reduced shipping weight from 820 to 775 pounds, cut crating time 30%. Company stacks and handles units four high. Shipping damage due to container failure has been completely eliminated.

**Wirebound
BOXES & CRATES**

choose your course of action...

- ☐ Send me general information... complete descriptive book titled "What to Expect from Wirebounds."
- ☐ Send me specific information... tear sheets of case histories of packing products similar to mine.
- ☐ Give me direct action send an Institute trained sales engineer to show the advantages of Wirebound packing for my own product.

NAME _____ POSITION _____

FIRM _____

STREET AND NUMBER _____

CITY _____ ZONE _____ STATE _____

OUR PRODUCT IS _____ IT WEIGHS _____

mail now to **WIREBOUND BOX MANUFACTURERS ASSOC.**
Room 1153—327 South LaSalle Street, Chicago 4, Illinois

Users names on request



CYCLOHM MOTORS
SOUND RIGHT
NOTE FOR

Magnecord INC.




*You can tell a MOTOR by
the COMPANY it keeps!*

EMC AND CYCLOHM

FRACTIONAL H.P. MOTORS

UNIVERSAL AND DIRECT CURRENT

1/1000 TO 1/4 H.P.

SHADED POLE
1/2000 TO 1/80 H.P.

INDUCTION TYPES
1/1400 TO 1/5 H.P.

They supply for the world's largest manufacturer of high fidelity tape recording equipment, says of their motor requirements: "Dependability is and should be the leading feature." Some stations using Magnecorders for permanent recordings depend on perfect performance and Magnecord's reputation for trouble-free operation is the best.

These CYCLOHM and EMC motors are used by Magnecord's latest equipment. For the drive mechanism, a CYCLOHM model 2500 Permanent Synchronous motor is used. The CYCLOHM model was chosen because of minimum vibration, minimum maintenance and extremely quiet operation.

A CYCLOHM model 2500 torque motor with high resistance rotor supplies drive for the take-up reel, speed varying with load changes. This motor also is used for driving the cassette.

Write to your Magnecord and check with EMC and CYCLOHM on your motor needs. For information about CYCLOHM Model 2500 or any of the various CYCLOHM synchronous motors and EMC Universal Direct Current or Shaded Pole motors write today for hands-on literature and quotations. EMC and CYCLOHM fractional h.p. motors are available with all shaft and voltages easily adapted to your application.

HOWARD

REPT. DIV.
HOWARD INDUSTRIES, INC.

PACT. DIV. WILMINGTON

EMC ELECTRIC MOTOR CORPORATION

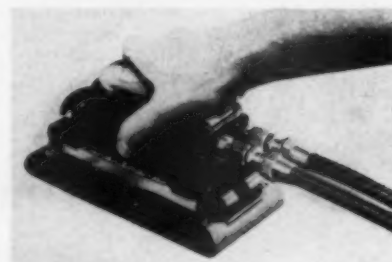
200 Madison Ave. New York 17, N.Y.

(Continued from page 150)

the relays is for protecting a-c motors up to 2 hp against damage caused by low line voltages. Other important uses include power and lighting bus transfer and in some cases over-voltage protection. Nominal coil voltages for standard heavy duty types are 115, 230 and 440 volts, 60 cycles; for light duty types 115 and 230 volts. Relays with 115 volt coils pick-up at 105 volts and drop-out at 95 volts. Heavy duty contacts are rated at 25 amperes, 60 cycles, 2 hp maximum. Ward Leonard Electric Co. is located at 31 South Street, Mount Vernon, N. Y.

No. 129 — Use Coupon on Page 130

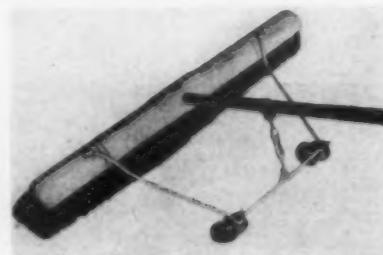
Single-Pad Sander Leaves No Marks



A straight-line action single-pad air sander that produces an extra-smooth surface without swirls or pressure marks is Sundstrand Machine Tool Company's latest portable tool. It operates both wet or dry, making it suitable for use on a wide variety of finishing operations. It is small, compact, easy to handle, and can be worked with equal ease over both flat and curved surfaces. Made by Sundstrand's Pneumatic Division, Rockford, Ill.

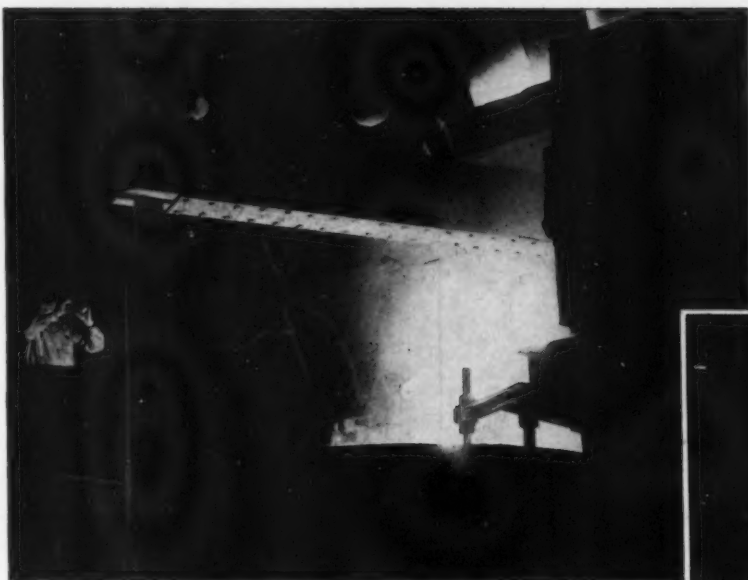
No. 130 — Use Coupon on Page 130

Floor Brush Chassis Cuts Strain of Lifting



A plant supervisor with an eye for reducing drudgery and conserving manpower invented this chassis for eliminating lifting of heavy floor brushes. Studies in the plant, where sweeping is a continuous job, show that the chassis greatly reduces fatigue. Angle of the handle

(Please turn to page 154)



1. Basic Electric Steel is made for all forgings.



2. Forgings are made from Ingots of proper size for the best final result.



3. Forgings are rough-machined before heat treatment to insure greatest uniformity.



4. The heat treating equipment is adapted to the job to be done.



5. National Forge can make your forgings—large or small—rough or finished.

6. Precision is a by-word at National Forge.

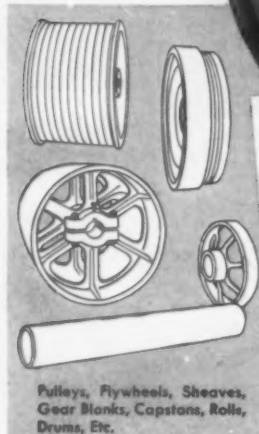


NATIONAL FORGE AND ORDNANCE CO., IRVINE, WARREN CO., PENNA.

PYOTT

**for SPECIAL
SIZE
ROUND
CASTINGS**

MADE FROM STOCK
PATTERNS 2" TO 144"
SIZE RANGE



Pulleys, Flywheels, Sheaves,
Gear Blanks, Capstans, Rolls,
Drums, Etc.

Just send Pyott a rough sketch of the special size casting you want, including dimensions. Pyott foundry skill and stock patterns will insure quality and save you time and money. Write now, for the PYOTT SPECIAL SIZE CASTINGS FOLDER.

PYOTT FOUNDRY & MACHINE CO.

337 NORTH SANGAMON STREET • CHICAGO 7, ILLINOIS

Flat Belt Pulleys ... V-Belt Sheaves ... Quee-Dee Flat Belt Pulleys
... V-Belts ... Gears ... Couplings ... Sprockets ... Flywheels

WILL YOUR NAME BE REMEMBERED?

**GITS
Quality
Plastic Products**

Cement friendship and esteem—to bring a warm glow of remembrance! The cost is small... the value high!

**GITS
"Super Right Angle"
Unbreakable Plastic
FLASHLIGHT—**

one of the famous "Mile of Light" Flashlights. Nickel plated brass, lacquered, perfect parabolic reflector gives a strong beam of pre-focused light. 3-way "ON-OFF" and signaling switch always works. Transparent or lustrous colored case.



No. 100
"Plastic Eye"
Flashlight



No. 200 Junior
"Plastic Eye"
Flashlight

**GITS "ONE-HAND"
KNIFE**
Highest quality carbon steel blade, safelocks in 5 positions. Unbreakable plastic handles in six lustrous colors.

**GITS RAZOR-KNIFE
AND KEY CHAIN**
Razor blade with a safety handle. Refillable. Assorted lustrous colors.

GITS LETTER OPENER
Transparent, with off-set magnifying handle. Endurably sharp edges.

PAR-KIT No. 377
Ingenuous combination of wind shield ice scraper, key chain and coin holder. Holds 2 nickels and 2 pennies—always ready for parking meter.

ASK your specialty jobber to show you the complete line of Gits Quality Plastic Products, or write direct, using coupon below.

GITS MOLDING CORP.

4640 W. HURON STREET, CHICAGO 44, ILL.

Gentlemen:

☐ Please send me at once sample of the item I have checked below and prices in _____ quantity.

☐ Plain ☐ With imprint

☐ "Plastic Eye" Flashlight
☐ "Plastic Eye Jr." Flashlight
☐ "Super Right Angle" Flashlight
☐ "One-Hand" Knife
☐ Razor-Knife and Key Chain
☐ Letter Opener
☐ Nail File
☐ Thimble
☐ Stir Stix

☐ Bracelet Key Holder
☐ Shoe Horn
☐ Key Tag
☐ Match Pac
☐ Par-Kit

☐ The items you illustrate do not fully satisfy my needs, so please send me your complete catalog and full information. (PLEASE PRINT)

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

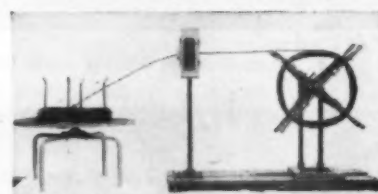
CITY _____ ZONE _____ STATE _____

(Continued from page 152)

can be adjusted to a comfortable position. On the idle stroke, the operator lowers the handle and rolls the brush upon the casters. Sweeping can be done on either push or pull stroke. The brush can be manipulated around and under obstacles. Brush life is prolonged because of less battering against the floor. Chassis can be reversed to equalize wear and slant of the bristles. Wider brushes than ordinarily feasible can be used. Marketed by JEF Mfg. Co., 331 W. Monument Bldg., Dayton 2, Ohio.

No. 131 — Use Coupon on Page 130

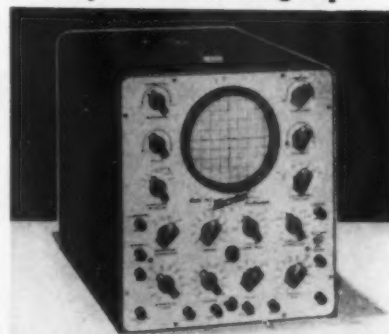
Coiling Machine For Wire, Rope, Cordage



Neal Company, 318 No. 18th St., Omaha, Neb., has brought out a time and labor saving coiling machine for wire, wire rope, cordage and other materials. The coiling reel collapses to allow coils to be lifted off. A brake prevents backlash. The measuring wheel rides the material, eliminating errors due to bends and twists.

No. 132 — Use Coupon on Page 130

Versatile General Purpose Oscillograph



Hickock Electrical Instrument Co. offers a new 5" oscillograph as a high quality, versatile instrument for general purpose industrial and electronic laboratory use. It is described as having outstanding stability range and sensitivity generally available only in higher priced equipment. Full technical information on the oscillograph, called the Model 640, is available from Hickock at 10686 Dupont Avenue, Cleveland 8, Ohio.

No. 133 — Use Coupon on Page 130

(Please turn to page 156)

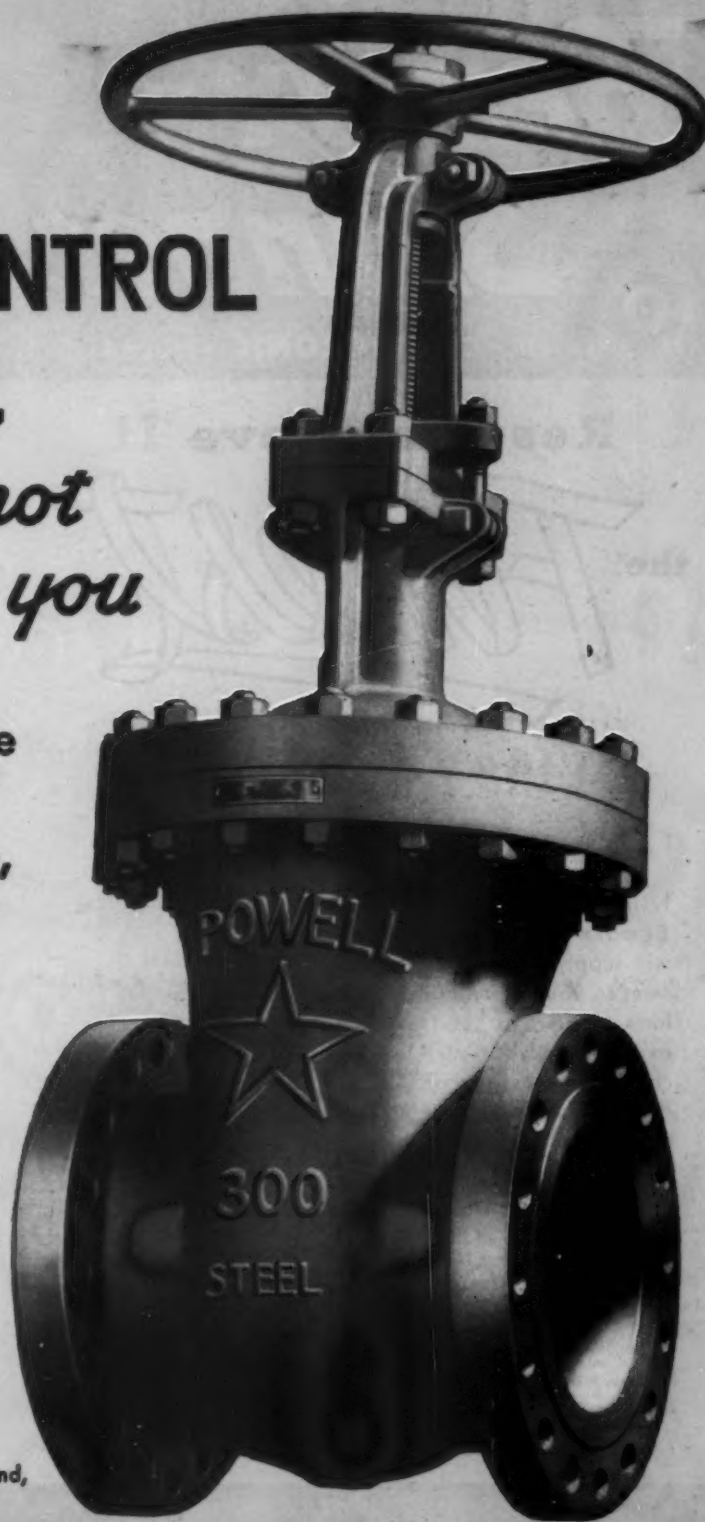
**IN FLOW CONTROL
EQUIPMENT,**
*the BEST is not
too good for you*

Why not take advantage
of Powell "know-how"
in design, workmanship,
and **use of materials?**

The Complete Line includes valves
in Bronze, Iron, Steel and the
widest selection of Corrosion-
Resisting metals and alloys ever
made available to Industry.

*Quality fine
throughout
"The Line"*

Fig. 3003—Class 300-pound, flanged end,
Cast Steel O. S. & Y. Gate Valve.



POWELL

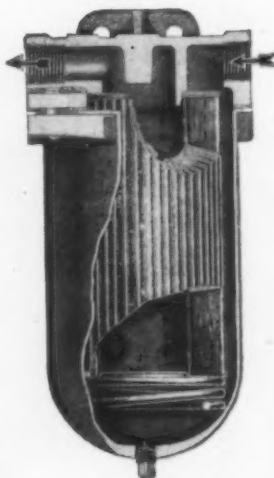
The WM. POWELL CO., 2525 Spring Grove Ave., P. O. Box 106, Station B, Cincinnati 22, Ohio

Bendix-Skinner

ORIGINATOR OF MICRONIC FILTRATION

Results Prove It the *Finest* Name in Filtering

Nine times out of ten **Bendix-Skinner** Filters will supply the "finest" answer to your filtration problems. Here are the facts: available with patented, exclusive, resin impregnated cellulose elements; simple, quick replacement; high flow rate with minimum pressure loss; no channeling or bypassing; over 350 models providing filtration from $\frac{1}{2}$ micron (.000019") upwards at flow rates from 1 to 5000 g.p.m. Why not let **Bendix-Skinner** filtration engineers work with you? Write us direct.



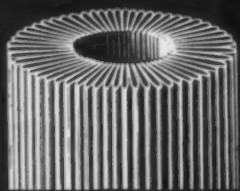
Model 3110-P filter element, $6\frac{1}{8}" \times 3\frac{1}{2}"$, has a filtering area of 940 sq. in.



Disc-type



Ribbon-type



Pleated-type

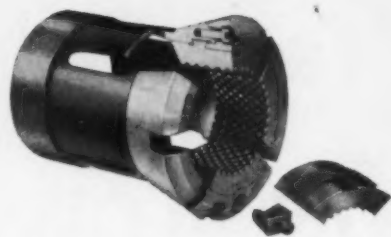
SKINNER PURIFIERS DIVISION OF

1503 TROMBLY AVENUE, DETROIT 11, MICHIGAN

Export Sales: Bendix International Division, 72 Fifth Ave., N.Y. 11, N.Y.



Quick-Change Master Collet



Sutton Tool Company, Sturgis, Mich. announces a master collet in which the pads can be changed without removing the collet from the machine spindle. The replaceable pads are securely locked by a greater holding mechanism to prevent slippage from bar thrust, and are "diamond serrated" to grip work together by holding both horizontal and rotating thrusts at an angle. Known as the style FL, the tool is available for automatic screw machines, and handles all sizes and shapes of stock within capacity limits. Sutton suggests the collet for larger machines where tooling costs are especially heavy.

No. 134 — Use Coupon on Page 130

Portable Tool Cuts Large Diameter Rod, Chain, Etc.



Guillotine 20E is a portable hydraulic cutter with a 60,000 lb. thrust for cutting larger diameters of rod, bar shapes, chain, bolts, wire rope, cable and similar material. Cutting cycle takes only $2\frac{1}{2}$ seconds. Cutting head weighs only 38 lbs. Present models will cut rod and bars up to $1\frac{1}{16}"$ diameter, wire rope up to $1\frac{1}{4}"$ and cable up to $3\frac{1}{2}"$. Cutting head unit is connected by 25 feet of flexible hose to a high speed hydraulic pump. The pump unit is semi-portable and can be dolly-mounted for complete mobility. It is available with either a 2 hp electric motor or a portable gasoline motor. Manufacturer is Manco Mfg. Co., Bradley, Ill.

No. 135 — Use Coupon on Page 130

(Please turn to page 160)



Known Everywhere...

...For well over a quarter of a century BAY STATE has consistently supplied *Highest Quality* grinding wheels and allied abrasive products to world-wide industry. This steadfast Quality aim has been a major factor in BAY STATE'S recognition as a leader in the entire abrasive industry.

Conscientious, skilled craftsmanship... Modern Manufacturing Equipment... ...Research Facilities... Personnel with Extensive Engineering Background... Patented Manufacturing Features... these factors all contribute to BAY STATE'S continued aim to keep Quality paramount at all times.

BAY STATE ABRASIVE PRODUCTS CO., Westboro, Mass., U.S.A.

Branch Offices and Warehouses — Chicago, Cleveland, Detroit, Pittsburgh
Distributors — All principal U. S. Cities, South American and European Countries
In Canada: Bay State Abrasive Products Co. (Canada) Ltd., Brantford, Ontario

Top Performance Consistently Duplicated

Alemite Announces THE MOST AMAZING

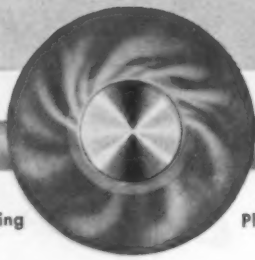
ALEMITE OIL-MIST AUTOMATIC LUBRICATION SYSTEM

Unbelievably simple system atomizes oil into mist, circulates it through tubing to bearings. Bathes all bearing surfaces with fresh, clean, cool oil film. Uniformly maintains oil film on all sliding, rubbing, rolling parts regardless of variations in load, temperature or speed! No "peaks and valleys" of lubrication.

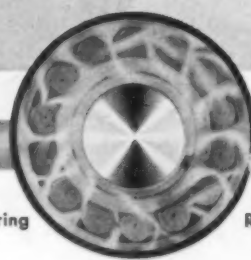
Fully automatic—eliminates waste and the uncertainties of the "human element." Extends bearing life as much as 17½ times. Seals bearings against dirt and abrasives. Cuts oil consumption as much as 90%. Greatly reduces the number of oils needed.



... In
Ball Bearing



... In
Plain Bearing



... In
Roller Bearing



Here is lubricating progress so major—so far-reaching—as to command the interest of every executive concerned with industrial lubrication practices and costs.

You'll marvel that a system so simple—without any moving parts—can bring such a revolutionary change in the lubrication of machinery.

The Alemite Oil-Mist System requires only two simple settings—to control the amount of air pressure, and to regulate the density of the Oil-Mist. Once set, they require no further attention.

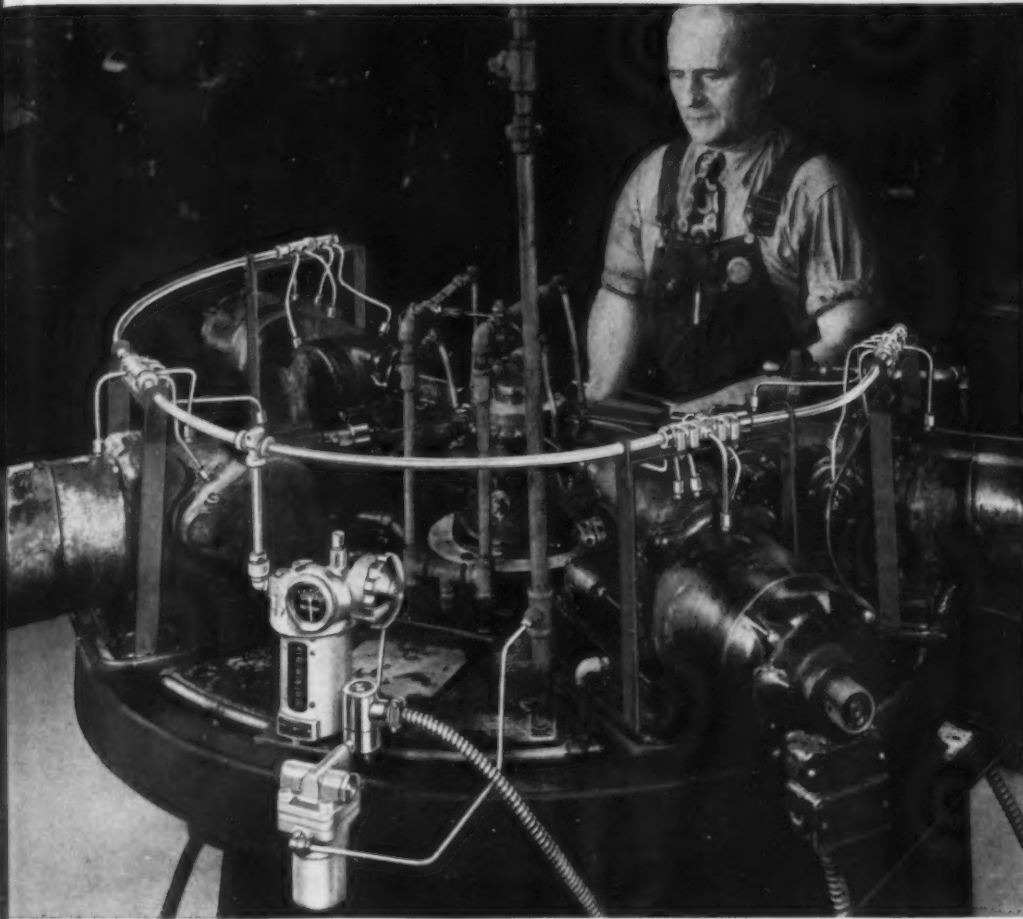
This great new Alemite Oil-Mist System has been proved by plant installations on a wide variety of machines in many industries including steel, coal, food processing, chemicals, metalworking, textiles and woodworking. The results are spectacular—in reduced lubrication costs, reduced maintenance costs, reduced service, reduced "down-time."

Desk-Top Demonstration, No Obligation—Mail Coupon at Right

The handy coupon attached to your Company letter-head will bring a trained Alemite Lubrication Representative to your office. In a brief yet thorough Desk-Top Demonstration he will answer questions and tell you how Alemite Oil-Mist can provide more efficient lubrication at lower cost than you ever thought possible. Clip and mail the coupon today—to Alemite, Division of Stewart-Warner, 1850 Diversey Parkway, Chicago, Ill.



G AUTOMATIC LUBRICATION SYSTEM EVER INVENTED



Here is an example of the many kinds of mechanical motions that can be lubricated by an Alemite Oil-Mist System, using one oil. On this automatic drilling machine Alemite Oil-Mist is lubricating 20 points, including cam, quill, worm and gear, reduction gear, gear and rack, gear train, plain and ball bearings. With Alemite Oil-Mist, this machine consumes only 10 oz. of oil during an 80-hour work week. System draws less than ONE cu. ft. of air per minute at 10 psi.

← OIL MIST

← OIL MIST

8 Advantages of the Alemite Oil-Mist System

1. Continuous Lubrication

Constantly deposits a fresh, clean film of oil on all surfaces of all bearings in the system.

2. Fully Automatic Lubrication

Eliminates the uncertainties of the "human element." (Refilling the reservoir is the only periodic service required.)

3. Elimination of Guesswork

Every bearing picks up only as much Oil-Mist as it needs. No bearing can be overlooked. None gets over-lubricated.

4. Reduction of Bearing Temperatures

Oil-Mist acts as bearing coolant, can lower bearing temperatures as much as 20°F.

5. Reduction of Types of Oil

Oil-Mist greatly reduces the number of oils that must be stocked, handled, and applied.

6. Elimination of "Down-Time"

All bearings in the system are constantly lubricated while the machine continues to produce.

7. Extension of Bearing Life

Oil-Mist multiplies the life of bearings many times. The life of grinding machine bearings has been extended from 400 to 7,000 hours.

8. Consumption of Oil Cut 90%

The Oil-Mist System usually consumes approximately $\frac{1}{10}$ the amount consumed by any other oiling method.



Mail this coupon today!

Alemite, Division of Stewart-Warner, Dept. U-41
1850 Diversey Parkway, Chicago 14, Ill.

☐ Please have your Alemite Lubrication Representative arrange a desk-top demonstration of Oil-Mist. This entails no cost or obligation on my part.

☐ Please send me information about Oil-Mist by mail.

My name

Position

Company (leave blank if letterhead attached).....

Alemite OIL-MIST Lubrication



**Making Fast,
but**

FAST! 

In many cases, the secret of economical—and profitable—fastening operations in production is *speed*, both in getting parts together properly and cutting costly fumbling with defective fasteners.

Naturally, fastener quality is an important key to high-speed assembly. A *good* fastener—uniform dimensionally and right for the job—can save its price many times over.

Scovill makes good fasteners

Scovill fasteners are made on special order only; no "bin" stock is carried. They are "custom-made" for each job.



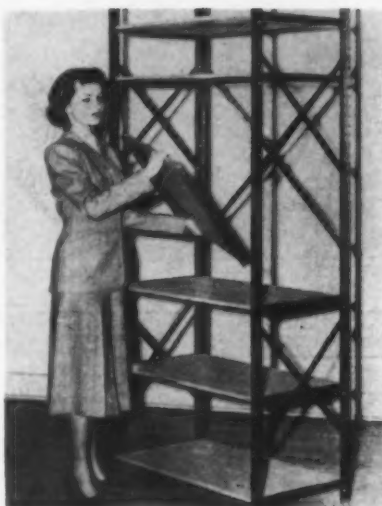
Montclair, N. J. • Detroit • Wheaton, Ill.
Los Angeles • Cleveland • San Francisco

New Cleaners Replace Chlorinated Solvents

Northwest Chemical Co., 9310 Roselawn, Detroit, Mich., has worked out a cleaning process for all metals which replaces hot chlorinated solvent degreasing. It utilizes emulsion cleaners based on petroleum products. In effect, the system is equivalent to spraying the work with solvent, while immersed in water, rather than in the air. Since the emulsions are characteristically unstable, mechanical agitation is required to maintain dispersion of the solvent in the water phase. The agitation may be induced by propeller type mixers or by a pump and jet system. Engineering details are available. Northwest says the process is adaptable to the smallest shop or the largest plant, automatic or manual handling.

No. 136 — Use Coupon on Page 130

Steel-Wood Shelving Easily Installed



Lyon Metal Products, Inc., Aurora, Ill., still has steel shelving available, but is offering much shorter date of delivery on its new line of adjustable steel-wood shelving. Rigid steel uprights support the hard wood shelves in such a way that no bolts are used to attach them. A pressed steel clip attaches each shelf to the upright, giving maximum adjustability and strength. Installation is easy because of the minimum number of parts to be handled. Shelves are easily moved, dismantled or rearranged. Only tools required are a hammer and screwdriver. Shelving is available in dimensions of 3' wide, 1' or 1½' deep, and 7' high.

No. 137 — Use Coupon on Page 130

(Please turn to page 162)



WAXES

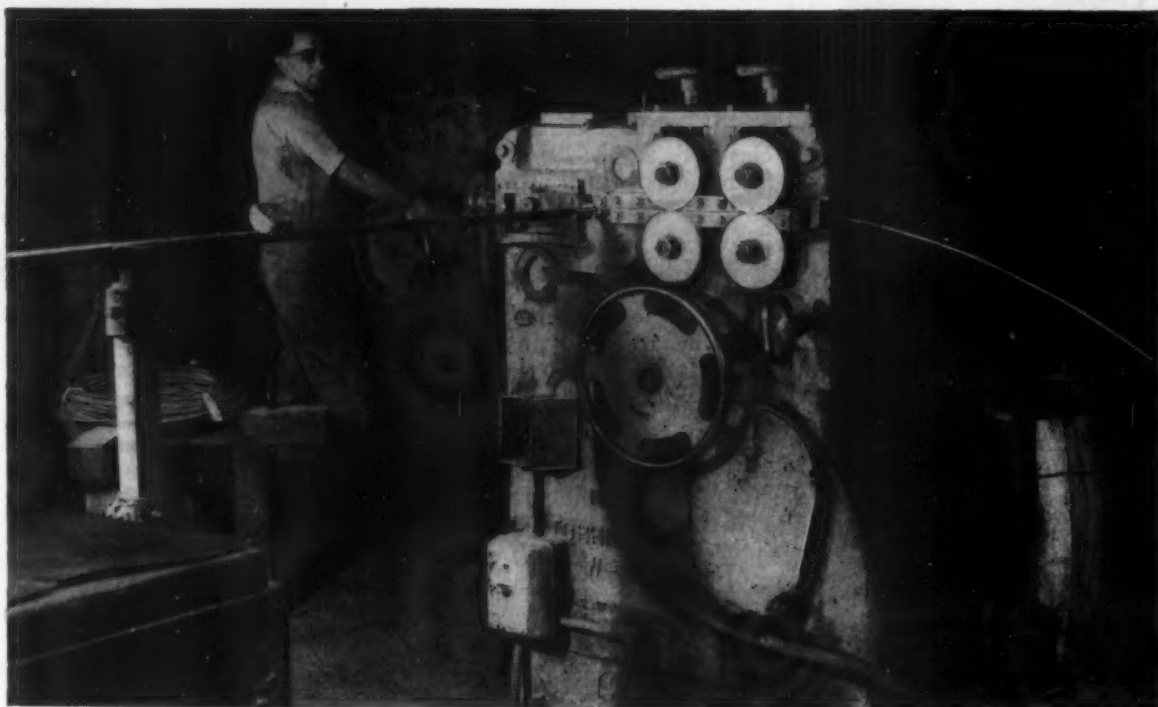
A thin coating of Fuller Floor Wax protects and beautifies your floors. Cleaning problems are simplified, too, since the dirt is all on top of the wax film. This means *less cleaner, less elbow grease, less time* required.

Your Fuller industrial representative can recommend the type — liquid or paste — best suited for your requirements. Ask him, too, about Fuller Furniture Polish and Fuller Metal Polish to protect and improve the appearance of your furniture and equipment, or write . . .



3554 MAIN STREET, HARTFORD 2, CONN.
In Canada: Fuller Brush Co., Ltd., Hamilton, Ont.

HIGH CARBON WIRE



Manufacturing control casing with Roebling wire.

Save money with Roebling wire **... round, flat and shaped**

WHEREVER a manufactured product calls for high carbon steel wire, Roebling wire will bring you top results . . . and help your production, too! Every inch of these Roebling specialty wires is identical in grain, gauge and finish. Your preparation time is lowered; machine stoppages and rejects cut way down. And there's a Roebling round,

flat or shaped wire for almost every application.

Roebling's specialty wire plant is one of the largest in America. Today a large share of its output is required in the rearmament program. We assure you, however, that we will always do our level best to fill your orders as required. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

Atlanta, 934 Avon Ave ★ Boston, 51 Sleeper St ★ Chicago, 5525 W. Roosevelt Rd ★ Cincinnati, 3253 Fredonia Ave ★ Cleveland, 701 St. Clair Ave, N.E. ★ Denver, 4801 Jackson St ★ Houston, 6216 Navigation Blvd ★ Los Angeles, 216 S. Alameda St ★ New York, 19 Rector St ★ Odessa, Texas, 1920 E. 2nd St ★ Philadelphia, 230 Vine St ★ San Francisco, 1740 17th St ★ Seattle, 900 1st Ave, S. ★ Tulsa, 321 N. Cheyenne St



An ounce of prevention

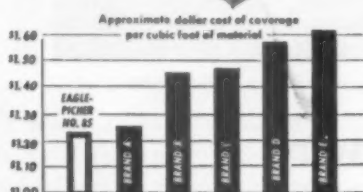
EAGLE-PICHER INDUSTRIAL FLOOR DRY NO.85

is worth
a pound of cure

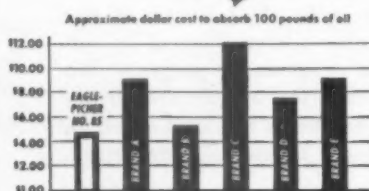
Eagle-Picher Industrial Floor Dry No. 85 is a granular mineral compound—chemically inert, non-combustible, and insoluble in oil, grease, kerosene or water. It can give you positive reduction in operating costs plus greater safety. Write for complete information.

Here's proof that Eagle-Picher
Floor Dry No. 85 is tops in
efficiency, economy

Comparative Coverage Costs



Comparative Absorption Costs



Packed in convenient 50-pound,
multi-wall Kraft paper bags

The Eagle-Picher Company

GENERAL OFFICES: CINCINNATI (1), OHIO

The Eagle-Picher Company
Department P-4-51
Cincinnati (1), Ohio
Gentlemen: Please send me complete
information about Eagle-Picher Industrial Floor Dry No. 85.

Name _____

Address _____

City _____ County _____ State _____



Wide Use Seen for Silicone Alkyd Resins

Plaskon Division, Libbey-Owens-Ford Glass Co., Toledo, O., has announced the first chemically combined silicone alkyd resins commercially available. Plaskon states that not only have the resins an imposing list of properties, but prospects of a low-price range as usage increases are good. The properties that are expected to give them wide use are heat resistance; excellent resistance to weathering, humidity chemicals and salt spray; plus satisfactory performance under widely varying climates. At the present price the resins are said to have an economy advantage in their suitability as single-coat applications, thus eliminating primer coats with the accompanying time, price and labor costs. In the foreseeable future Plaskon expects the resins to approach the price range of regular alkyd resins.

No. 138 — Use Coupon on Page 130

New Hoists Are Light, Better Balanced



Wright Hoist's new "Frame B" Speedway electric hoists are made with a shorter, deeper drum than the "Frame 1" hoists and are therefore lighter and better balanced. Available in capacities from 250 lbs. to 1000 lbs., they are said to be excellent for hook suspension. Since, the highest capacity is 1000 lbs., the hoists use two parts of 3/16" Trulay cable, a smaller load hook and a smaller trolley. They have shaved gears and the lower limit switch is standard equipment. Wright, a division of American Chain & Cable Co., Inc., is located in York, Pa.

No. 139 — Use Coupon on Page 130
(Please turn to page 165)

L&I

makes only
the **FINEST**
QUALITY
REAMERS

L&I Reamers 1/8" thru 1 1/2" by 64ths are standard and are carried in stock. Sizes thru 3/8" are ground from the solid after hardening for dimensional stability. Grinding of both faces provides finer cutting edges, permits faster feeding and keeps resharpenings to a minimum. Flutes are ground for easy chip removal.



In sets for your convenience

Letter, Wire Gage and Fractional Size Reamers are available in sturdy folding metal cases. Write for catalog or see your L&I Distributor.

L&I

The Reamer Specialists

LAVALLEE & IDE, INC.
CHICOPEE, MASS.



Buddy Boy
POPCORN
Served Hot

Buddy Boy Popcorn
Dispenser, molded for
Buddy Boy Popcorn Co.,
Elgin, Illinois

Write on your letterhead for the new Injection
Molded and Extruded Plastics Catalog. Or,
for detailed information about ~~WILL-PLASTIC~~
piping, tubing and fittings, write for circulars
containing data and illustrations.
*Trademark Registered



Skillful Molding
Helps
Popcorn Sales
POP

Let this Buddy Boy hot Popcorn Dis-
penser show you how we can serve your
plastic product interests best.

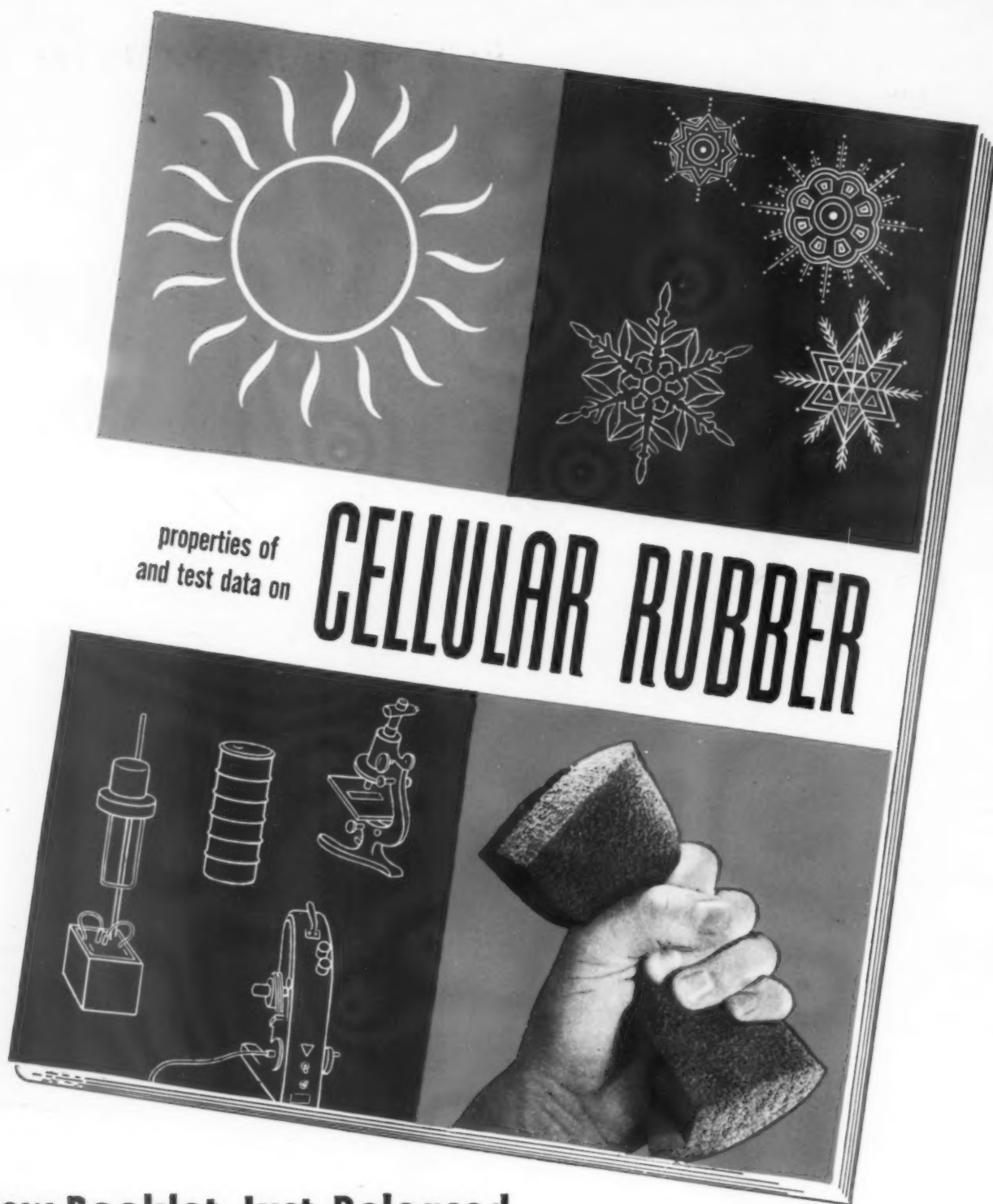
Size-wise this was a big job. In spite
of its size, however, the dispenser de-
manded ultra fine precision in both
engineering and molding. The trans-
parent pieces, being both non-warping
and unsupported, are identical and re-
quired a very close fit. The legs, made
hollow and in 2 pieces, needed the same
fit. Transparency, edge lighting
depressed from inside, and the colorful,
large one piece top provided the point-
of-sale punch.

Let us take the same kind of sales-
minded, sound engineering look at your
plastic problems today. It's help without
obligation on your part.

ELMER E. MILLS CORPORATION

INJECTION MOLDERS and EXTRUDERS of: Tenite, Lumarith, Plastacele, Fibestos, Lucite, Nylon, Plexiglas, Polystyrene, Styron,
Loalin, Vinylite, Geon, Plexene, Polyethylene, Cerex, Forticel, ~~WILL-PLASTIC~~, Saran, and other Thermoplastic Materials.

2930 NORTH ASHLAND AVENUE • CHICAGO 13, ILLINOIS



New Booklet Just Released

Send for your free copy of this up-to-date, authoritative work on the grades of, the chemical and physical properties of, and test data on cellular rubber. Lists A. S. T. M., Army, Navy and Air Force specifications, among others. The most complete reference work yet produced on this highly-adaptable product of widely diversified usage.

Write us today and your free copy will be mailed promptly.

THE SPONGE RUBBER PRODUCTS COMPANY

404 Derby Place

Shelton, Connecticut

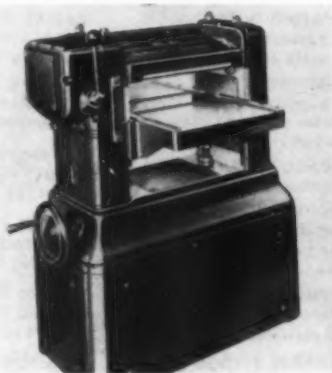
Foot Lever on Platform Raises 1-Man Work Tower



This electro-hydraulic work tower can be quickly raised to full height (platform level 17' above floor) by means of a foot operated lever on the platform. No connection to an electric outlet is necessary. The telescoping tower, designed for 1-man operations, is easily rolled anywhere and locked in the working position. The loaded platform rises at the rate of 10' in 25 seconds. The platform descent can be controlled to 1 ft. per second. Retracted height is 7'. By telescoping two opposite side members, the base folds to 30" x 65", thus permitting passage through narrow doors. Made by Safeway Steel Products, Inc., 6234 W. State St., Milwaukee 13, Wis.

No. 140 — Use Coupon on Page 130

Wood Planer Offers Many Economies



A new Delta-Milwaukee machine that offers maintenance departments a chance to save on lumber is the 13" single surface wood planer No. 22-100. Delta points out three opportunities for economy with the unit: buying cheaper, rough-cut (Please turn to page 168)

BUSINESS IN MOTION

To our Colleagues in American Business...

Never has industry turned out more goods than during the past few years of unprecedented customer demands. In endeavoring to meet these, Revere has developed new techniques, established new plants, installed the newest equipment and modernized the old, and stepped up its training program, including the development of some new ideas in relation to safety. Throughout the country, similar steps have been taken by manufacturers generally. This is the response of free enterprise to the stimulus of a free and growing market. It is fortunate that American industry was not only willing but able to do this, because now it is evident that these facilities and these skills must be devoted more and more to the defense of our freedom.

Defense Orders or "DO's" are being issued, and their volume is bound to increase. Already prime contractors are seeking sub-contractors, and sub-contractors are receiving orders too, down to small local firms operating only a few machines. Perhaps few people realize the importance of the "small shop"; the fact is that these establishments have a tremendous total capacity supplementing that of the great corporations, which practically never make everything that is needed for a finished product such as a tank, a plane, a ship, radar equipment. The "smalls" are just as vital as the "biggs."

Revere knows that when the time of trial comes, it is more important than ever to increase production efficiency. This makes complete information essential to those who have taken on DO contracts. Revere pledges its full cooperation, and will gladly provide all it knows about its metals.

This knowledge is made available in two principal ways. First, there are many

booklets containing technical data, including physical properties, and also in many cases suggestions as to recommended fabrication practices. In addition to the booklets, which are distributed on request, Revere either reproduces or summarizes them in the various Sweet's Files, Chemical Engineering Catalogue, Marine Catalogue, Refinery Catalogue. This printed material is therefore available freely to all who will ask for it, or look it up. The second way in which Revere's knowledge and skill is made available is through the Technical Advisory Service, a group of capable men whose collective experience covers practically all applications of copper and copper alloys and aluminum alloys.

In war and peace, these men have rendered invaluable service, collaborating closely on such matters as selection of the proper metal, temper, width, gauge, and in helping to solve production problems. As a result, scrap has been reduced, rejects less-

ened, production increased, money and materials saved. The services of the Technical Advisors are obtainable through the Revere Sales Staff which also has wide experience in the selection and application of Revere Metals. If you have orders whose specifications include non-ferrous metals, Revere will gladly place its information at your disposal.

If you purchase and work with other materials, Revere suggests that it should be realized that not only is American productive capacity tremendously greater, but that there has been a likewise large growth in knowledge about materials of all kinds. So it is recommended that no matter what you make now, or are called on to make in the future, you ask your suppliers to share their knowledge with you. It will make you and our country stronger.



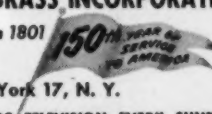
REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

Executive Offices:

230 Park Avenue, New York 17, N. Y.

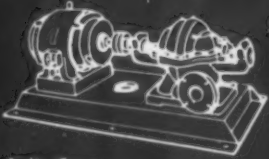
SEE "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY



FAIRBANKS

INDUSTRIAL

BUYERS



Split-Case
Centrifugal Pumps



Deep Well
Turbine Pumps



Bladeless
Impeller Pumps



Rotary Pumps



Totally Enclosed
Fan-Cooled Motors



Builttogether Pumps



Axial Air Gap
Motors

WHAT

Common source for a long line of uncommonly good standard and special scales, pumps and electrical equipment—that's Fairbanks-Morse. It is a line that offers a double advantage—*depth*, for a broader range of choice; *quality*, attested by the thorough satisfaction of users in every branch of industry. Use this partial listing as a handy check against your particular needs.

ELECTRICAL EQUIPMENT

Alternators

AC generators, revolving armature, type TG.
AC generators, revolving field, types TG & TGZK.
AC generators, revolving field, slow speed engine, type TGZO.

Axial Air Gap Motors

Polyphase open
Polyphase enclosed
Single phase

Direct Current Generators

Standard types.
Open ball bearing type

DG high speed.

Open sleeve bearing type DGZB high speed, $\frac{1}{2}$ to 30 KW.
Open engine type DGZO, low speed, $\frac{1}{2}$ to 300 KW.
Partially enclosed marine type DGZM, $\frac{1}{2}$ to 300 KW.

Direct Current Motors

Standard types

Motor Generator Sets

Induction and synchronous, single & polyphase
Vertical induction polyphase

Polyphase Induction Motors

Standard open type, squirrel cage.
Totally enclosed, non-ventilated, squirrel cage.
Totally enclosed, fan cooled, squirrel cage.
Explosion proof, fan cooled, squirrel cage.
Special duty, squirrel cage.
Multi-speed, squirrel cage.

Constant torque, variable torque and constant hp. types, 2-speed, 3-speed and 4-speed single winding and double winding.

Also offered in a wide range of mechanical modifications, such as splash proof, totally enclosed fan cooled, vertical, etc.

Gear Motors

All motor types and type "D" Motor gears, with Axial Air Gap motors.
Textile Motors

Wound Rotor, Slip-Ring Motors.

Vertical Motors—Solid Shaft.
Vertical Motors—Hollow Shaft.

Single Phase Motors

Repulsion start, induction run motors.
Vertical hollow shaft motor.
Vertical solid shaft motor.

Synchronous Motors

High speed Types T and TZB.
Engine-type low speed Type TZO.

PUMPS

Base-mounted centrifugal pumps.
Builttogether centrifugal pumps.
Centrifugal fire pumps.
8-Cover side-pot duplex power pumps.

WHERE

You'll save time and foot-work by calling—or visiting—your nearest Fairbanks-Morse sales center listed here.

One call may answer many of your immediate and future purchasing problems. Too, full engineering and application assistance is quickly available on any and all of the Fairbanks-Morse products which might interest you.

ATLANTA 3, GEORGIA

760 Lee St., S. W.
AMhurst 7701

BALTIMORE 18, MD.

659 E. 25th St.
BEImont 5258

BIRMINGHAM 1, ALA.

626 N. Ninth St. Zone 4
3-6546

BOSTON 10, MASS.

178 Atlantic Avenue
LAfayette 3-3600

BUFFALO 3, N. Y.

33 Franklin St.
Lincoln 4210

CHARLOTTE 2, N. C.

Liberty Life Bldg.
Room 605
6-2893

CHICAGO 5, ILLINOIS

1550 S. State St.
Harrison 7-7100

CINCINNATI 2, OHIO

49 Central Avenue
MAin 3010

CLEVELAND 14, OHIO

3000 W. 117th St.
Clearwater 1-3300

COLUMBUS 8, OHIO

1034 Goodale Blvd.
WAlnut 8581

DALLAS 2, TEXAS

1713 N. Market Street
Central 4347

DENVER 2, COLO.

1500 17th Street
TAbor 6241

DES MOINES 17, IOWA

2017 Dean Avenue
6-1189

DETROIT 13, MICHIGAN

11110 East Warren Ave.
VAlley 1-7100

DULUTH 2, MINN.

Board of Trade Bldg.
2-7538

HOUSTON 13, TEXAS

5521 Navigation Blvd.
WASide 2159—(LD 506)

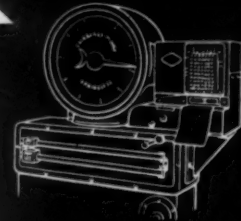


FAIRBANKS-MORSE,

MORSE

PRODUCTS

GUIDE



Printomatic
Dial Scales

PUMPS (Cont.)

Deep well turbine pumps.
Duplex steam pumps.
Frame constructed rotary pumps.
Horizontal angle flow pumps.
Paper stock pumps.
Rotary pumps.
Sewage and trash pumps—horizontal and vertical, including new bladeless "non-clog" impeller types.
Split-case centrifugal pumps.
Two-stage Builttogether pumps.
Two-stage centrifugal pumps.
Vertical angle flow pumps.
Vertical propeller pumps.

SCALES

Abattoir Scales
Airplane Scales
Automatic Charging Scales

Bakers' Scales
Barrel Scales
Batching Scales
Belt Conveyor Scales
Bench Dial Scales
Bench Scales

Cane Hoist Scales
Canners' Scales
Coal Tipple Scales
Concrete Aggregate Scales
Confectioners' Scales
Conveyor Weigher Scales
Counter Scales
Counting Scales
Crane Dial Scales
Cream Receiving Scales

Dairy Scales
Dump Scales
Dial Scales—All Types

Evans Balance Scales
Electric Control Weighing Scales

Folding Platform Scales

Furnace Charging Car Scales

Grain Testers

Hanging Dial Scales
Hopper Scales
Household Scales

Industrial Scales

Livestock Scales
Laundry Scales
Locomotive Wheel Load Scales

Mail Scales
Meat Beams
Mine Car Scales
Monorail Dial Scales
Motor Truck Scales
Motor Truck Wheel Load Scales
Motor Truck Axle Load Scales

Overhead Suspension Platform Scales
Overhead Track Dial Scales

Platform Counter Scales
Portable Dial Scales
Portable Platform Scales
Precision Indicators
Predetermined Weighing Scales
Printomatic Weighers
Printomatic Crane Scales
Printomatic Railroad Track Scales

Railroad Track Scales

Suspension Crane Scales
Suspension Platform Portable Scales

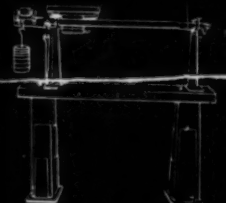
Tank Scales
Test Weights

Unit Counting Scales

Wagon Scales
Water Meter Beams
Warehouse Scales
Weigh-Bagger Scales
Weigh-Can Scales
Wheelbarrow Scales



Bench Scales



Full-Capacity
Beam Scales



Counting Scales

INDIANAPOLIS 2, IND.
1499 N. Harding St.
Franklin 3684
ATlantic 3092

JACKSONVILLE 4, FLA.
930 East Adams St.
5-6473

KANSAS CITY 7, MO.
1300 Liberty Street
Victor 6474

LOS ANGELES 11, CALIF.
4535 S. Soto Street
Jefferson 8151

LOUISVILLE 8, KY.
2008 So. Brook St.
CAlhoun 1469

MEMPHIS 7, TENN.
676 Jefferson Ave.
5-1614

MILWAUKEE 3, WIS.
404 N. Plankinton
DAly 8-0180

MINNEAPOLIS 15, MINN.
417 S. Fourth Street
MAin 4353

NEW ORLEANS 13, LA.
1000 St. Charles Ave.
RAYmond 3115

NEW YORK 4, N. Y.
80 Broad St.
HANover 2-7470

OMAHA 8, NEBRASKA
902 Harney St.
ATlantic 3122

PHILADELPHIA 8, PA.
401 N. Broad St.
WA 2-4100

PORTLAND 14, OREGON
105 S. E. Tayler St.
EASt 0131

PITTSBURGH 24, PA.
4301 Main Street
SCHenley 1-3123

PROVIDENCE 3, R. I.
187 Pine Street
GASpee 1-1531

ST. LOUIS 2, MO.
217 South Eighth St.
CHestnut 7483

ST. PAUL 1, MINN.
220-26 E. Fifth Street
GARfield 4335

SALT LAKE CITY 1, UTAH
153 W. Second South St.
3-2108 & 3-5139

SAN FRANCISCO 7, CALIF.
630 Third Street
EXbrook 2-5855

SEATTLE 99, WASH.
Salmon Bay Terminal
ALden 6600

STUTTGART, ARK.
403 South Main St.
185

TULSA 3, OKLA.
1335 Hunt Bldg.
3-8231

WASHINGTON 5, D. C.
1000 Vermont Ave., N. W.
District 6694

FAIRBANKS-MORSE de MEXICO S. A.
Balderas 146, Mexico 1, D. F. Mexico
10 06 74 y 10 09 58

a name worth remembering

Export Division:

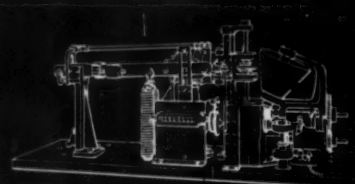
NEW YORK 4, N. Y. 80 Broad Street—HANover 2-7470



General Purpose
Motors



High Torque
Compressor
Motors



Belt Conveyor
Scales



BEALL

SPRING WASHERS

KEEP BOLTED ASSEMBLIES
permanently **TIGHT**

BEALL helical SPRING WASHERS have "live action" and constantly exert tightening pressure over a long range. They compensate for ALL causes of looseness including vibration, bolt stretch, wear and breakdown of finish under the nut and bolt head. **IN STOCK** in all Standard Sizes; made of Carbon Steel, Stainless Steel, Everdur, Duronze, and other metals. Manufactured to the exact dimensions specified by the American Standards' Association.

SPRING WASHER SPECIALISTS for 30 years

BEALL TOOL DIVISION of HUBBARD & CO.
160 Shamrock St. • East Alton, Ill.



TIGHT
when assembled



TIGHT
in service



TIGHT
after long service

(Continued from page 165)

lumber and planing it down; salvaging waste stock by re-working it into usable lengths; reclaiming old, marred and painted stock. The machine will handle stock as short as 6" unbutted, as wide as 13", as thick as 5", and as thin as 1/16". The three knife cutterhead takes 210 cuts per second, giving a smooth cut that reduces amount of subsequent sanding necessary. Delta Power Tool Dvn., Rockwell Mfg. Co., Milwaukee 1, Wis.

No. 141 — Use Coupon on Page 130

D-C Welder Has A-C Advantages

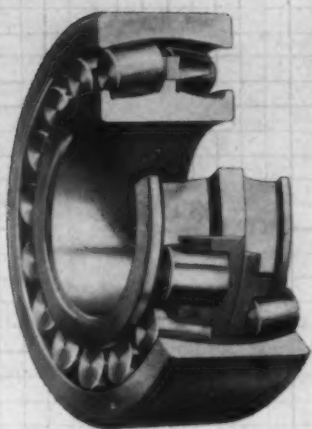


Miller Electric Manufacturing Co., Appleton, Wis., calls its new selenium type unit a d-c arc welder with a-c advantages. These features are said to give it maximum efficiency and performance with minimum maintenance: exclusive arc start surge; electric current control which provides remote control operation; no moving parts to wear out and cause noise; instantaneous voltage recovery produces greater arc flexibility; does not require high starting current; quiet in operation; less arc blow than standard d-c welders. The welder is compact, and provided with lifting hooks at side so that it can be easily handled with an overhead hoist.

No. 142 — Use Coupon on Page 130

(Please turn to page 170)

**SEE THIS MONTH'S
CLASSIFIED SECTION
OF PURCHASING
PAGE 338**



when the drilling is tough

TORRINGTON *SPHERICAL ROLLER* **BEARINGS**

Wilson Manufacturing Company backs up drill bits with smoother power, easier control and rugged construction in its Giant Remote Control Rigs.

Torrington Spherical Roller Bearings are used in many applications in Wilson rigs. Despite heavy loads Spherical Roller Bearings deliver power efficiently without developing binding stresses under shaft deflection. Accuracy of contact between rollers and races provides high capacity, insures stamina and low maintenance on exacting drilling schedules.

Automatic self-alignment, high load capacity and precision operation are features of Spherical Roller Bearings that can help you improve performance of your equipment. Call in a Torrington engineer to help you work out details of design and application.

THE TORRINGTON COMPANY

South Bend 21, Ind.

Torrington, Conn.

District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON *SPHERICAL ROLLER* **BEARINGS**

SPHERICAL ROLLER
TAPERED ROLLER
STRAIGHT ROLLER
NEEDLE
BALL
NEEDLE ROLLERS



Are you troubled with "THREADACHES" in your Tapping Operations?

Here's Your Prescription~

Rx For immediate relief—
apply HY-PRO taps with
correct speed, feed and lubrication.
Continue treatment for complete
cure. More accurately threaded
holes will result, and your
assembled parts can be
fastened tighter, stronger
to resist vibration

ORDER THRU YOUR DISTRIBUTOR

PRESCRIPTION TAPS

From simple ailments to serious breakdowns in tapping operations, HY-PRO High Speed Steel Taps are prescribed with every assurance of a complete recovery.

Extremely tough and rugged, HY-PRO Taps maintain their built-in accuracy to provide more accurately threaded holes per tap . . . longer life on the job . . . higher production at less cost.

For every type of Tapping "threadaches" there's a sure cure HY-PRO Tap expertly prescribed by specialists in our Engineering Department.

**HY-PRO
TAPS**

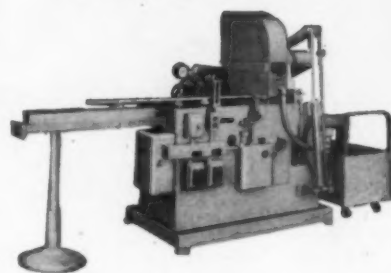
HY-PRO TOOL CO.

New Bedford, Mass., U.S.A., A Subsidiary of Continental Screw Co.

**COMMERCIAL • PRECISION
SPECIAL
Ground Thread Taps**



Automatic Wet Abrasive Cutting Machine



Every operation of the new Campbell Model 270 wet abrasive cutting machine—stock feed, clamping, wheel feed, adjustment for wheel wear and ejection of cut pieces—is completely automatic. No adjustment of the time cycle is required, regardless of the size of stock being cut or the length of the feed up to 12". The machine cuts up to 2" diameter solid annealed or unannealed steel and 3½" diameter tubing. Made by Campbell Machine Division, American Chain & Cable Co., Inc., Bridgeport, Conn.

No. 143 — Use Coupon on Page 130

Also Noted . . .

Durepel is the name of a new coating that protects masonry walls against water seepage and dampness. Chemically balanced combination of inorganic mineral and metallic components react, with the addition of water, to form a hard, dense coating. Easy to apply. Durepel Corp. is at 10 E. 43rd St., New York, N. Y.

No. 144 — Use Coupon on Page 130

Selas Corporation of America, Philadelphia 34, Pa., has developed a new device for the continuous removal of petroleum vapor from compressed air and other gases. Called the Vape-Sorber, it also removes water, free oil, water-oil emulsions and dirt.

No. 145 — Use Coupon on Page 130

General Electric Company, Schenectady, N. Y., has a new electronic combustion safeguard for oil burners. It provides immediate cut-off of fuel in case of failure.

No. 146 — Use Coupon on Page 130

Quick treatment can do much to lessen the seriousness of a burn. Gebauer Chemical Co., 9412 St. Catherine Ave., Cleveland, O., offers an important industrial first aid

(Please turn to page 172)

You can
catch errors
here...



but you
can stop them
here...
*with better
plant lighting*



THE best-lighted area in many plants today is the inspection table. But important as inspection lighting is, it can only help detect errors after they happen. The way to prevent manufacturing errors is with better lighting *throughout* the plant.

Records prove that plant Light-Conditioning—bringing the lighting up to the latest scientific standards with the right lamps in the right fixtures in the right locations—has reduced many manufacturers' rejects by 4% . . . 15% . . . 25%, and more! And along with fewer rejections has

come a reduction in accidents, more production, less fatigue.

Can we help you with your problems on production lighting? Call your nearest G-E lamp office. Or see your G-E lamp supplier or your local electric service company.

For a free copy of a new illustrated bulletin "Planned Lighting for Industry", write General Electric, Division 166-P-4, Nela Park, Cleveland 12, Ohio.



When you "Light-Condition" your plant, do it with G-E lamps

To get G-E quality, always specify that the lamps you buy carry the G-E monogram.



R-32 LAMP

For high bays where maintenance is problem



FILAMENT LAMPS

For wide variety of industrial applications



FLUORESCENT LAMPS

High efficiency, easy maintenance



MERCURY LAMPS

Light at lowest overall cost

You can put your confidence in—

GENERAL  ELECTRIC



"I found that supplier in the 'yellow pages'"

The 'yellow pages' of the telephone directory play a more and more important role for the P. A.

When certain items become scarce... when you need a new or substitute product... the 'yellow pages' provide a mighty handy and quick reference to sources of supply.

You simply flip the 'yellow pages' to the heading describing the product or service you need. Look over the listings and ads and pick the manufacturer or distributor you want. Many include descriptive data or brand name information.

You can depend on the 'yellow pages' to tell where-to-buy-it.

America's Buying Guide for Over 60 Years



Please mention **PURCHASING** Magazine when writing to advertisers.

PURCHASING

(Continued from page 170)

item on its "Dispenseal" bottle which provides a stable, jet-propelled solution of **tannic acid** at the touch of a thumb. The tannic spray relieves pain, and dries quickly into a coating.

No. 147 — Use Coupon on Page 130

Packaged **magnesium anodes**, produced by Apex Smelting Co., 2539 W. Taylor St., Chicago, Ill., help the battle against corrosion. The Anode-Pak units consist of either a 17 or 32 lb. anode (for a 10 or 20 year life), packed with a chemically balanced backfill in a permeable cloth sack.

No. 148 — Use Coupon on Page 130

Speco, Inc., 7308 Associate Ave., Cleveland, O. has added three new specially **chromated anti-rust paints** to its Rustrem line of maintenance coatings. They are available in clear, black and aluminum.

No. 149 — Use Coupon on Page 130

Neolite, Goodyear Tire & Rubber Company's famous sole, heel and innersole material for the shoe trade will soon be produced in continuous strips up to 72" wide. Goodyear says the future of Neolite is "limited only by the imagination of manufacturers who use it as a basic material". First to use it in the new form: luggage, handbag and accessories industries.

No. 150 — Use Coupon on Page 130

A **no-drip, no-run nozzle** made by Upressit Products Corp., New York 17, N. Y. will attract manufacturers of liquids in the chemical, drug and food fields. The nozzle aids pouring, prevents drying, and helps keep the neck of the can clean.

No. 151 — Use Coupon on Page 130

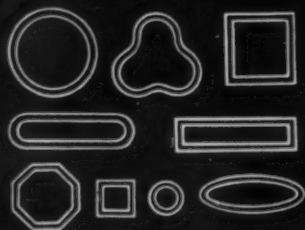
If your plant has bathing facilities, you'll be interested in a three-way service to help **prevent athlete's foot** offered by Waverly Petroleum Products Co., 1724 Chestnut St., Philadelphia 3, Pa. It consists of a sanitary solution, a new type of mechanical spray dispenser, and a replacement service for worn pumps for any other kind of spray dispenser now in use.

No. 152 — Use Coupon on Page 130

Newage International, Inc., 521 5th Ave., New York 17, N. Y., is distributing a portable direct reading **metal hardness tester**. By just pressing the handgrips on the sides of the instrument, immediate direct "at-the-job" readings are obtained of all types of metals. Made in England.

No. 153 — Use Coupon on Page 130

(Please turn to page 176)



ROUND AND SHAPED TUBING
 (.010" to 1/2" O.D. Max. Certain Analyses .035" max. wall to 1 3/4" O.D.)
 Available in:
Carbon Steels:
 A.I.S.I.—C-1008, MT-1010, MT-1015, C-1118, MT-1020, C-1025, C-1035, E-1095
Alloy Steels:
 A.I.S.I.—4130, 4132, 4140, 4150, 8630, E-52100
Stainless Steels:
 A.I.S.I.—303, 304, 305, 309, 310, 316, 317, 321, 347, 403, 410, 420, 430, 446, T-5
Nickel Alloys:
 Nickel, "D Nickel", "L Nickel", "Monel", "K Monel", "Inconel", 30% Cupro Nickel, 18% Nickel Silver, Beryllium Copper.
 Reg. U.S. Trademark
 International Nickel Company

The HOLE Story
 —by—
Superior

Chapter 1

Shaping a Heart for a Pressure Gauge Requires "Technology in Tubing"

Soon after the tube pictured above comes off the shaping roll, it will be processed into a Bourdon tube, the heart of a pressure gauge, by one of our customers.

The design of a gauge movement and the skill of the gauge builder have a bearing on its accuracy. But nothing can compensate for an irregularly responding Bourdon tube.

That's where Superior comes in. The metal-lurgy of the tube, its dimensional precision and physical characteristics are all critical . . . and all are rigidly controlled at Superior.

This rigid control is applied to all tubing produced by Superior.
 For example, in the production of seamless steel tubing for hydraulic applications, industry standards permit a carbon range of .08 to .18%. This range is not good enough for Superior. Aiming for a carbon content of .12%; Superior Hydraulic Quality tubing is always held to .15% maximum. This insistence on adherence to strict standards applies equally to dimensional tolerances.

Superior produces tubing to rigid specifications year in and year out. We have the engineers, metallurgists, research, production and test facilities that it takes to draw the highest quality small tubing in the widest variety of analyses.

You can call this combination of facilities, men, methods and machines "know-how" . . . or you can call it experience. But whatever you call it the result is always fine small tubing to do a better job for you. **SUPERIOR TUBE COMPANY**, 2034 Germantown Avenue, Norristown, Pa.
 West Coast: *Pacific Tube Company*, 5710 Smithway St., Los Angeles 22, Calif. UNDERHILL 0-1331.

Superior
 THE BIG NAME IN SMALL TUBING
 All analyses .010" to 1/2" O.D.
 Certain analyses (.035" max. wall)
 Up to 1 3/4" O.D.



Calling the Roll...

precisely to customers' specifications through every operation . . . is what these Bristol rolling mill men pride themselves on doing *every time*. In the last war, these men (and hundreds of others of the same mettle) made tremendous contributions to the military. *And they're ready to do it again.*

The Bristol Brass Corporation, makers of Brass in Bristol, Conn., since 1850. Offices or warehouses in Boston, Chicago, Cleveland, Dayton, Detroit, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Providence, Rochester.

Another insight into the full meaning of: **"Brass made Bristol-Fashion"**



PRODUCED: BEARINGS THAT LAST 3 TIMES LONGER

**An example showing how National Bearing Division
has helped lick costly maintenance problems**

AIR that's laden with dust and scale can be rough on bearings—as a large Midwest steel plant found out with an average of just 2 months' service on bearings in charging car wheels and edgers. Replacement labor and expense were going way out of line, when National Bearing Division stepped into the picture.

Our engineers made a special study of this mill's problem. As a result of this study they recommended a hydraulic bronze, both for its superior anti-frictional qualities and its high abrasion-resistance. Special methods of alloying and pouring, developed through N-B-M metallurgical research, insured sounder and denser castings of this bronze—further in-

creasing its resistance to wear and abrasion.

Result? These bearings last 3 times as long as the bronze formerly used! Replacement labor and expense took a nosedive.

This actual example of how National Bearing Division saved money for a customer proves two important points: *first*, that N-B-M has the facilities for thorough research on proper alloying, and *second*, that we have the engineering skill to apply the fruits of this research to our customer's problems on . .

Non-Ferrous Bearings and Castings—
As-Cast or Machined

Bronze Bars—
As-Cast or Machined;
Cored, Solid, Hexagon

Babbitt Metals—
For every type of
bearing service

AMERICAN

Brake Shoe

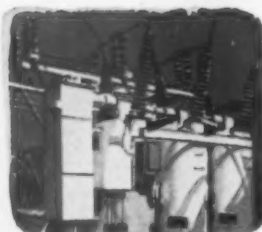
COMPANY

NATIONAL BEARING DIVISION

4940 Manchester Avenue • St. Louis 10, Mo.

PLANTS IN: ST. LOUIS, MO. • MEADVILLE, PA. • NILES, OHIO • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

Which METAL ALLOY BEST SUITS Your FASTENING NEEDS ?



SILICON BRONZE bolts and nuts, both stock items at Harper, are widely used on power line equipment for their high tensile **STRENGTH** and **CORROSION-RESISTANCE**. Fastenings of this metal give dozens of years of service without failure.



STAINLESS STEEL bolts and nuts, because of their resistance to **CORROSION** and **HEAT**, are used to secure bubble cap assemblies in distillation towers. Depending on the application, other alloys such as **COPPER** and **MONEL** also are used.



MONEL and **NAVAL BRONZE** fastenings assure trouble-free operation for marine equipment such as this sewage pump. They are selected because of their resistance to salt water and other highly **CORROSIVE** chemicals.

**HARPER has the products
and the answers!**

Regardless of what your need may be—if it calls for top quality bolts, screws, nuts or fastening accessories in non-ferrous or stainless steel—Harper can help you.

Over 7000 different items in stock and ready for delivery from warehouses and distributors coast to coast—backed by mass production facilities and a group of fastenings specialists who know alloys.

For further information or help on your own problems, mail coupon today.

**SPECIALISTS IN
ALL NON-CORROSIVE METALS**

**HARPER
EVERLASTING FASTENINGS**

Chief Metallurgist—The H. M. Harper Co.
8222 Lehigh Ave., Morton Grove, Ill.
() Send Catalog () Our problem is:

Name.....
Address.....

"Whiz Puracide" is a new **disinfecting agent** said to be extremely powerful and rapid in action, yet stainless, odorless, non-corrosive and non-irritant to tissue when used as directed. Made by R. M. Hollingshead Corp., 840 Cooper St., Camden 2, N. J.

No. 154 — Use Coupon on Page 130

Ace Plastic Company, 91-30 Van Wyck Blvd., Jamaica 1, N. Y. has introduced for the first time **nylon FM #10001 plastic balls** in sizes from $\frac{1}{8}$ " to $\frac{3}{4}$ ", and with tolerances to plus or minus .0001. Ace says they provide toughness at low temperature, are abrasion-resistant, stable at high temperatures, light in weight and resistant to chemicals.

No. 155 — Use Coupon on Page 130

An improved sled-type spreader for the **traffic-line strip** made by Universal Marine & Mfg. Corp., 137 Alexander St., Yonkers 2, N. Y., makes it possible to lay down lines in fractional widths from 2 to 8 inches. The machine itself is gravity fed, has no hose, no jets, no pressure tank to worry about.

No. 156 — Use Coupon on Page 130

Six coal-tar base **anti-corrosive coatings** for the protection of metals, wood, masonry and insulation, field tested for several years, are being produced in quantity by Continental Coatings Corp., 304 W. 44th St., New York, N. Y. They form a tough, elastic film which resists the penetration of chemicals, fumes, moisture and heat.

No. 157 — Use Coupon on Page 130

With the addition of curved block, Kaylo **heat insulation** now comes in the most complete range of sizes and thicknesses of any high temperature insulation available, according to Owens-Illinois Glass Co., Toledo 1, O. The range covers tubes and pipes from $\frac{1}{4}$ " diameter to 72" and vessels up to 60'.

No. 158 — Use Coupon on Page 130

A new swing-out **transformer panel** for its Bob-Cat **electric cable hoists** is announced by The Cleveland Chain & Mfg. Co., Cleveland 5, O. It eliminates the necessity for two commonly required service operations—removing attachment bolts or disconnecting electrical leads.

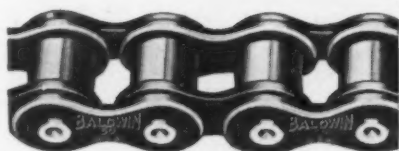
No. 159 — Use Coupon on Page 130

James B. Sipe & Co., Pittsburgh 16, Pa. has a new **rust-inhibiting primer**, called Multi-Use, that is said to withstand severe exposure well over a year without showing any appreciable signs of corrosion. It can be used on almost any clean ferrous or aluminum surface.

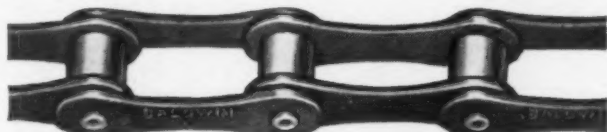
No. 160 — Use Coupon on Page 130

our

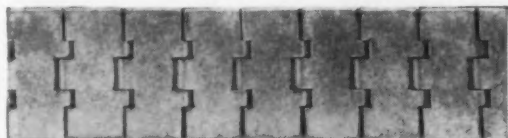
complete chain line



BALDWIN-REX ROLLER CHAIN, available in a complete range from 1/4-inch to 2 1/2-inch pitch for high speed power transmission and timing.



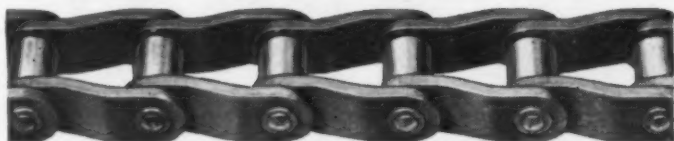
BALDWIN-REX DOUBLE PITCH ROLLER CHAIN for economical power transmission and conveying under slow speeds.



REX TABLE TOP CHAIN for conveying bottles, jars, cans, packages, small parts where smooth transfer and cleanliness are required.



REX PINTLE CHAIN, a drive and conveyor chain used where long life due to greater bearing area is needed.



REX CHABELCO STEEL CHAINS, available in a range of sizes from 1 1/4-inch to 36-inch pitch for drive and conveyor service under moderate to heavy loads.



These chains are representative of the complete Chain Belt Line. There are many other sizes and types as well as a complete range of chain attachments for every type of conveyor service.

Chain Belt Company
of MILWAUKEE

**can save you time ...
cut costs ...
increase efficiency!**

There are several important reasons why you'll find it pays off in dollars to make your chain selections from the complete Chain Belt line.

In the first place, you'll find it advantageous to order all your chain requirements from one source. Because our line is complete, you can order from us the right chain for every application in your plant. You'll save valuable time, simplify your ordering, expedite your paper work, by dealing with only one source of supply.

Again, because the line is complete, you'll be sure to get the exact chains that best fit your particular applications. Our Field Sales Engineers can recommend without prejudice the chain which will mean lowest overall cost and highest overall efficiency. Whether cast chain, steel chain or finished steel roller chain is indicated, you'll find the size and type you need when you order from Chain Belt Company.

Furthermore, when you specify Rex or Baldwin-Rex Chains, you are assured the highest quality product money can buy. Over 50 years of chain-making experience are behind every strand. Every design has one or more exclusive features found in no other make. The Chain Belt Field Sales Engineer is anxious to give you the complete story. Call him or mail the coupon.

CHAIN BELT DISTRICT SALES OFFICES ARE LOCATED IN 30 LEADING CITIES

CHAIN BELT COMPANY
1764 W. Bruce Street
Milwaukee 4, Wis.

51-103

Gentlemen:

I am particularly interested in

☐ Please send me descriptive literature.

☐ I would like to have a Rex Field Sales Engineer call.

Name.....

Company.....Dept.....

Address.....

City.....State.....

MAINTENANCE SERVICE
UNIFIED RESPONSIBILITY
APPLICATION ASSISTANCE
RESEARCH, DEVELOPMENT AND TESTING
CO-ORDINATED ENGINEERING DESIGN

***Life-Line* starter**
PAIRED FOR PRODUCTION
***Life-Line* motor**

DO NOT LUBRICATE

EXTRAS like these assure long-range performance

You get more than a motor and a starter when you install these Life-Lines. You get complete design, engineering and service every step of the way.

CO-ORDINATED ENGINEERING DESIGN makes sure that Life-Line motors and Life-Linestarters give long-range performance. They're made together to work together.

RESEARCH, DEVELOPMENT AND TESTING in Westinghouse laboratories result in such features as:

Steel frame

Pre-lubricated bearings...in Life-Line motors
"De-ion"* arc quenchers

Bimetallic relays ... in Life-Linestarters*

APPLICATION ASSISTANCE to help you select the right motor and control.

Application engineers for your daily problems

Consulting engineers for special design problems

Field offices in 123 locations for all your service requirements

All at your service without obligation.

UNIFIED RESPONSIBILITY ... for operation of the motors and protective controls.

One supplier ... makes your work simpler.

MAINTENANCE SERVICE is all-inclusive and nationwide.

36 fully-equipped repair shops

52 engineering and service offices

Who else can offer all these EXTRAS?

More details? Ask your Westinghouse representative. Call him today. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-21637

YOU CAN BE SURE... IF IT'S
Westinghouse

Life-Line

MOTORS and CONTROLS





Be a wise bird about tubing



Bundyweld Tubing, double-walled from a single strip. Exclusive, patented beveled edge affords smoother joint, absence of bead, less chance for any leakage.

Why get yourself out on a limb with a tubing part that can't deliver the goods in your product?

Be like other wise birds and rely on Bundyweld . . . for lines that hold, come shaking or vibration, for coils that form right, or frames that are strong. The more stringent your needs, the better.

No other small-diameter tubing offers as much as this double-walled type of Bundy® tubing. It's extra sturdy, won't leak under pressure or give under normal strain. It's thinner walled, conducts heat faster and fabricates with ease.

For details, just get in touch with headquarters for small-diameter tubing . . . today.

Bundy Tubing Company

DETROIT 14, MICHIGAN

World's largest producer of small-diameter tubing

AFFILIATED PLANTS IN ENGLAND, FRANCE AND GERMANY

PURCHASING

APRIL, 1951

OFFICE EQUIPMENT and SUPPLIES



PURCHASING MAGAZINE — A CONOVER-MAST PUBLICATION

205 EAST 42ND STREET, NEW YORK 17, N. Y.

—Modernize—

YOUR CATALOG AND BULLETIN FILES

Bring your source information up-to-date on new and improved office equipment and supplies by checking the latest trade literature listed on this page. This special office equipment section is in addition to the regular trade literature section on pages 19, 20, 22, and 24!

— When Writing to Manufacturers Direct, Please Mention **PURCHASING Magazine.** —

E-Z-Out Order Forms Boon To Salesmen

32. YOUR sales department will be interested in the new Uarco E-Z-Out Order Forms and forms holder. The salesmen don't have to fuss with carbons—they're preinserted. The salesman writes but once, making house order, customer receipt, salesman's copy, and office copy. The forms holder which has a metal writing plate is of pocket size, and holds forms for all day. Samples of the forms available. Uarco Inc.

How To Cut Forms Handling Costs A Third Or More

33. BROCHURE tells how to cut forms handling costs 33% or more, by the use of Lithostrip continuous forms. These are said to enable one girl to do easier, quicker and better, the work being done by two operators and two machines, using out-

moded systems which may require as many as nine steps to handle one set of record keeping forms. You may wish to investigate this new method of handling invoices, purchase and shipping orders, voucher checks, credit memos, sales and manufacturing orders and so on. American Lithofold Corp.

Visible Follow-up Folders Simplify The Job

34. NEGLECTED follow-up may mean trouble, extra expense and complaints. A new help to follow-up men is a Visible follow-up folder which makes it unnecessary for buyers and others to go through every folder to check on follow-up action. The dates are calendared by colored sliding signals in the Visible tip of each order folder. Literature describes how Visible follow-up folders simplify purchase order control. Management Controls Divn., Remington Rand Inc.

Low Cost Mail Sorting Tables

35. STURDY, well finished mail sorting tables are described in new Corbin literature. Maker states that these tables are available to you with pigeon holes in the right size and arranged to meet your specific needs, at lower cost than you can build them. The tables are made of selected hardwoods. Joints are dovetailed and glued. All surfaces are smooth - sanded and lacquered. Tables are shipped knocked-down with all hardware needed for assembly. Corbin Cabinet Lock, Wood Products Divn., American Hardware Corp.

Four-Color Pencils Save Time

36. SPEEDING the work of multiple checking of estimates, plans and specifications, is one of the practical results obtained by the use of Four-Color pencils. An informative booklet explains the various time-saving uses of these pencils. Norma Pencil Co.

Fans For Year Round Indoor Comfort

37. COMPLETE line of electric fans for 1951 is described and illustrated in new Emerson general fan catalog. Its 32 pages give design and construction specifications with complete performance data on various types of desk and stand fans, air circulators, ceiling fans, exhaust and window fans, and other types. Copy of this catalog will help you to settle your fan problems easily. Emerson Electric Manufacturing Co.

READER SERVICE COUPON

(April, 1951)

MAIL TO:
PURCHASING—Reader Service Dept.
205 East 42 Street
New York 17, New York

Circle the numbers of the trade literature items you want.

32 33 34 35 36 37

Name..... Title.....

Company.....

Street Address.....

City..... Zone..... State.....

PAPER by SORG



Tested by **TIME!**

Versatility is the word for Sorg . . . for no other mill in the country produces such a wide range of papers for conversion and for printing purposes. Whether it be sturdy Sorex or Equator Index Bristol for menu covers, or special fabricating paper for drinking cups, Sorg's 99 years of papermaking "know-how" is your assurance of a quality paper tailor-made for the job.

THE SORG PAPER COMPANY • Middletown, Ohio

Manufacturers of Printing and Specialty Papers

SALES OFFICES AND REPRESENTATIVES IN

**NEW YORK • BOSTON • PHILADELPHIA • CHICAGO
ST. LOUIS • LOS ANGELES**

*Adequate lighting results in increased efficiency
and improved employee morale*

Selecting and Maintaining

● By G. S. Ketter, Electrical Engineer, Engineering Division, B. F. Goodrich Company

DIFFICULT as it is to actually prove, we know that adequate lighting results in increased efficiency and improved employee morale which means lower operating costs and improved safety records.

The technical details of a lighting system design are only a partial solution to the problem of satisfactory lighting and installation of the system is only the beginning, he said, for numerous factors contribute to its rapid depreciation. The most important of these factors are:

(1) Loss of light output due to lamp depreciation.

(2) Accumulation of dust and dirt upon the lamp and fixture.

(3) Discoloration and fading of paint or room finish.

(4) Loss of light output due to low voltage.

There are only a few things which can be done to maintain lighting equipment: Keep lamps replaced. It is economical to replace lamps before they finally fail. With planned lamp replacement sched-

ules, savings may be realized by replacing groups of lamps rather than individual ones, thus depreciated lamps are replaced by those of peak performance. Keep lamps and fixtures clean. A thorough cleaning of lighting equipment at least twice a year is usually justified economically in favorable locations. Keep surrounding reflecting surfaces clean. Keep lighting equipment in operating condition mechanically and electrically. When the illumination in an installation decreases to 75% of its initial value, the equipment should be cleaned.

To determine the depreciation characteristics of two different type fixtures which were being considered for a large scale office installation at The B. F. Goodrich Company in Akron, a six month test program was conducted. Both fixtures were of the four 40 watt fluorescent type. One type was glass bottom and glass side panels and the other type was louver bottom and glass side panels. Two identical, adjacent areas were selected and set up, using about twenty of each type of fixture. The tubes were allowed to burn continuously so as to rapidly accumulate hours. Losses were as follows at the end of 2340 hours burning time which represented normal usage for one year:

	Avg. Initial	Avg. @ 2340 Hrs.	Total Loss
	f-c	f-c	%
Louver Bottom	60.0	48.3	19.5
Glass Bottom	58.7	42.4	27.8

Plotting theoretical curves for tube loss including the loss during initial burn-in for the first 100 hours of tube life and extending these curves to the end of tube life, the losses due to dust and dirt were

Lighting equipment should be kept in operating condition mechanically and electrically. This well lighted interior is subdivided with Mills movable steel-glass partition walls.



Lighting Equipment

Abstract of paper presented
at Plant Maintenance Con-
ference in Cleveland

separated. These were as follows:

	At 25% Life	At 75% Life
Louver bottom	2%	7.5%
Glass bottom	7%	23.5%

It should be noted that these losses due to dust and dirt were based upon continuous burning but had the test been allowed to operate at a normal rate of burning would have been even higher compared to tube depreciation losses. These results had been anticipated but were confirmed by this test and merely serve as an example of how maintenance should be considered during the design period. In this particular instance, it effected only the selection of the fixture to be used, some five thousand of which were involved. Obviously, the glass bottom fixture was not used.

A particularly irritable source of trouble in office type fluorescent fixtures is the collection of dust and dirt upon the translucent side panels of the fixtures. Static charges collect on the plastic side panels and as a result, dust and dirt particles are attracted to it from the air. This condition is particularly bad in a rubber plant where all surrounding air is filled with minute particles of carbon black. This dirt has an unreasonable habit of collecting non-uniformly, and as a result, the side panels seem dirt-streaked or finger-printed, presenting an unusually disagreeable appearance.

Glass side panels could be used but offer disadvantages in hazard, weight and cleaning. For styrene side panels, this situation can be overcome by the use of a special liquid coating applied at the time of manufacture or assembly by wiping with a clean rag immersed in the

liquid. This liquid apparently destaticizes the plastic by insulating it, thus preventing the uneven accumulation of dirt and offering a satisfactory solution to the problem. The applied film will last for years, providing it is not completely removed by wiping with a water wet rag or by 'dipping in water. It is suggested that the panels be maintained between washing by dry brush, vacuum or dry rag wipe. After periodic washings of the fixtures, the special liquid should be re-applied in the same manner as the original treatment.

Poor fixture design has doubtless caused untold grief among maintenance personnel. In a study and survey of office type fluorescent fixtures representing many different manufacturers, the following objectionable items were observed:

- (1) Removal of louvers and wiring cover necessary in order to replace or reset starters.
- (2) Removal of lamp necessary in order to replace or reset starters.
- (3) Removal of side panels necessary in order to replace lamps.
- (4) Removal of louvers necessary in order to replace lamps. This type of design results in the expenditure of wasted time and rapidly becomes expensive in the maintenance of the lighting. It cannot be tolerated when by proper selection

and design, it can be overcome.

Use of the single pin fluorescent lamp offers maintenance advantages because fixtures equipped with this type of lamp are undoubtedly easier to re-tube and would involve less socket maintenance.

In these days of spiraling labor costs, the design of factory and office lighting should give serious consideration to the use of higher wattages than might normally be used for a given area, in order to lengthen the time between cleanings. The unit cost of electric energy is very stable compared to the hourly labor rate. Modern practice in the design of lighting systems has been to work toward a recommended average level of maintained illumination by taking into account ceiling and wall reflectance values, fixture mounting height, room index and maintenance factor, thus arriving at a certain number of fixtures for a given area. In view of conditions as they exist today, it appears desirable when certain pertinent data are unobtainable, to always use the more conservative estimating factors in design, thus resulting in higher maintained levels of illumination.

Past experience shows that it pays to install more than the currently recognized standard of illumination intensity.



Keep lamps and fixtures clean. A thorough cleaning at least twice a year is justified economically. This Sylvania installation maintains an average of 40 foot-candles at desk top level over the entire area.

Purchase Order, Request for Quotation, and Purchase Requisition Forms

The accompanying forms were supplied for use in the Forms Forum by Earle E. Hafer, Purchasing Agent, Bowers Battery and Spark Plug Company, Reading, Pa.

PURCHASING DEPARTMENT REQUISITION BOWERS BATTERY & SPARK PLUG CO. READING, PA.		REQ. NO. 14949 SV DATE _____ P. O. No. _____ REQ. BY _____ DEPT. _____ PURCHASED FROM: _____
ORIGINAL—For Mfg. Office, Reading, Pa. REQ.—For Emergency Pickup (on request) DUPLICATE—For Plant Office TRIPLICATE—For Dep't. Foreman		
TO BE USED FOR _____		
QUANTITY	DESCRIPTION	PRICE
Be sure to give specific details, such as catalog number, dimensions and other important data		
This confirms <input type="checkbox"/> Phoned <input type="checkbox"/> Written <input type="checkbox"/> Telegraphic <input type="checkbox"/> Verbal order to _____ by _____		
Delivery Schedule:	Suggested Source:	Approved by: _____ Plant Mgr. Vice Pres. & Gen'l Mgr.
VIA _____		

The requisition is 8 1/4" x 6 1/2"

In addition to factories at Reading, Boston, Paterson, New Philadelphia, O., Grants Pass, Ore., Macon and Denver, the Bowers Company has branches and warehouses in 15 or more other cities.

Form provides for basic record of order, and if used to confirm order, indicates whether original order was phoned, written, telegraphic or verbal.

"Conditions" in lower left hand corner are: (1) By accepting this order you warrant to the purchaser that the merchandise furnished will be in full conformity with specifications, drawing and/or samples. (2) All material must be forwarded as directed, otherwise the difference in freight and extra cost of handling will be charged to your account. (3) No charge will be allowed for packing, crating, freight, express, or cartage, unless agreed to and specified on this order. (4) Privilege is reserved by purchaser and extended by vendor, of cancellation of this order in the event delivery is not made within the time specified on this order, without charge of any expense incurred by vendor. In the event of cancellation of this order due to circumstances beyond our control, we will not honor any cancellation charges. (5) This order must not be filled at prices higher than last quoted or charged without advice.

(Please turn to page 188)

REQ. NO. BY: _____	DEPT. BY: _____	PURCHASE ORDER NO. 40715 DATE: _____
BOWERS BATTERY & SPARK PLUG CO. P. O. Box 1262 READING, PA. Phone: Laureldale 9771		THIS NUMBER MUST APPEAR ON ALL A.C. KNOWLEDGMENTS, SHIPPING NOTICES, BILLS OF LADING, PACKED SUPPLIES, PACKAGES, CARTONS, INVOICES, ETC.
DELIVER TO FACTORY BELOW: () Reading, Pa. () 12th and Bern, Reading, Pa. () Boston, Mass. () Macon, Ga. () Western Battery & Supply Co., Denver, Colo. () General Lead Co., Paterson, N. J. () The Paterson Co., New Philadelphia, Ohio () Pacific Wood Products, Grant's Pass, Ore. () _____		
WANTED _____		
PLEASE ENTER OUR ORDER FOR THE FOLLOWING, SUBJECT TO THE CONDITIONS SPECIFIED BELOW:		
QUANTITY	DESCRIPTION	PRICE
VIA _____		
MAIL ACKNOWLEDGMENT AND ADVISE SHIPPING DATE PROMPTLY		
CONDITIONS 1. By accepting this order you warrant to the purchaser that the merchandise furnished will be in full conformity with specifications, drawing and/or samples. 2. All material must be forwarded as directed, otherwise the difference in freight and extra cost of handling will be charged to your account. 3. No charge will be allowed for packing, crating, freight, express, or cartage, unless agreed to and specified on this order. 4. Privilege is reserved by purchaser and extended by vendor, of cancellation of this order in the event delivery is not made within the time specified on this order, without charge of any expense incurred by vendor. In the event of cancellation of this order due to circumstances beyond our control, we will not honor any cancellation charges. 5. This order must not be filled at prices higher than last quoted or charged without advice.		
BOWERS BATTERY & SPARK PLUG CO. Purchasing Agent		

The purchase order is 8 1/2" x 11"



DOW CHEMICALS...A *Great* NAME IN INDUSTRY

Great **DESK EQUIPMENT**

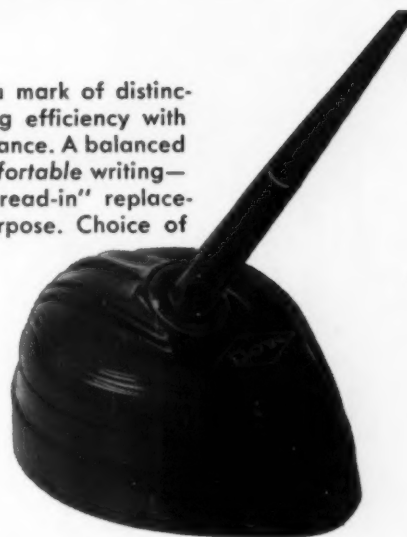
Exacting business men choose Morris desk equipment for quality, efficiency and years of service. Many famous users have their seals or emblems imprinted in Gold.



THE BERT M. MORRIS CO. has been extremely careful to design all their desk equipment for sturdy—efficient—time saving usage without sacrificing smartness. A rich appointment to any executive's desk, yet the complete setting shown—pen set, memo pad, phone rest, letter tray, ash tray and book ends, retail for little more than the cost of one higher priced,—comparable fountain pen set.

MORRIS FOUNTAIN PENS—a mark of distinction. The utmost in writing efficiency with streamlined, smart appearance. A balanced pen for long hours of comfortable writing—has 5 different quick "thread-in" replaceable points for every purpose. Choice of eight colors.

THERE IS NO SUBSTITUTE FOR QUALITY. All Morris writing sets are equipped with iridium tipped points and each point is tested at factory by actual writing.



MORRIS DESK EQUIPMENT STILL LEADS THE FIELD



MORRIS FOUNTAIN PENS—an efficient and economical pen set with "thread-in" point section. A real time and money saver in any office.



BOOK ENDS—MORRIS BOOK-EZE—at last an inexpensive book end to match modern office furniture.



MORRIS MEMO PADS—available in two types. With Jewelers Bronze bar that drops as paper is used or standard box style.



MORRIS LETTER TRAY—strong two point suspension allows access from entire front and both sides. Tiers quickly added, legal or letter size.



MORRIS ASH TRAY—A real He-Man ash tray. Glass lined, perfect for desk or conference table.

BERT M. MORRIS CO.

8651 WEST THIRD STREET • LOS ANGELES 48, CALIFORNIA

Low cost way to speed your MAIL SORTING

At lower cost than you could build them, you can buy sturdy, well-finished Corbin mail-sorting tables . . . with pigeonholes in the right sizes and arranged to meet your specific needs.

Corbin mail-sorting tables are made of selected hardwoods. Joints are dovetailed and glued. All surfaces are smooth-sanded and lacquered. They are shipped to you knocked-down, complete with all hardware needed for easy re-assembly.



Use the coupon below to send for illustrated literature and prices! You'll be surprised at how little it costs to speed-up your mail sorting with Corbin mail-sorting tables!



Corbin Cabinet Lock, Wood Products Division
The American Hardware Corp., New Britain, Conn.

Please send illustrated literature and prices on your Corbin mail-sorting tables.

NAME

FIRM

ADDRESS

Forms Forum (Continued from page 186)

BB&S Co									
SHIPMENTS RECEIVED									
DATE	QUANTITY	ITEM NO.	DATE	QUANTITY	ITEM NO.	DATE	QUANTITY	ITEM NO.	

Receiving record form on Receiving Department copy of purchase order.

BB&S Co									
ACKNOWLEDGED		RECEIVED		UNSHIPPED		BILLED TO US			
DATE	WHY STOP	DATE	ITEM	QUANTITY	QUANTITY	DATE	QUANTITY	ITEM NO.	AMOUNT

LETTERS COMPANY
DATE COMPANY

Correspondence, receiving and invoice record form on Purchasing Department copy of purchase order.

Telephone Lancelade 9771

REQUEST FOR QUOTATION
Bowers Battery & Spark Plug Co.
P. O. Box 1262
READING, PENNA.

Nº 3761

To: _____ Date: _____

PLEASE QUOTE US YOUR BEST PRICE AND DELIVERY ON:

Quantity	Description	Price	Shipment

This is NOT a Purchase Order. Signed _____ Purchasing Agent

We quote as above F. O. E. _____

Terms: _____ Signed _____

Date: _____ By: _____

Request for Quotation, size 8½" x 7¼". It is prepared in triplicate, two copies being sent to vendor, one of which is for return to Bowers Purchasing Department bearing quotation.

NYLON BEARINGS FOR ELECTRIC APPLIANCES

New use for nylon as bearing material is reported by the Polymer Corporation, Reading, Pa., manufacturers of plastic rod, tubing, strip, and castings.

Specifically, nylon is being used for rubbing blocks in certain types of electric shavers to initiate the make-and-break contact of the motor. The motor shaft has a roughly elliptical cross section which runs between two electrodes, opening and closing a spark gap according to whether the major or minor axis of the shaft is between the electrode arms. The electrode arms have the

nylon rubbing block, and the function of the nylon is to serve as a bearing.

Nylon is being used for this purpose because of its good resistance to deformation under heat, good wear resistance, and ability to give quieter operation. Since the shaver operates at about 8600 rpm, the bearing surface must provide good wear resistance or it will fail to properly interrupt the arc and run the motor. Another advantage of nylon as a bearing material is that it requires a minimum of lubrication. It also eliminates the additional plastic insulating strip that would be needed if a metal bearing were used.



*Take a tip
from the girls!*

**Change to UNDERWOOD CORPORATION
Hecto Sets and Hecto Carbons...
they're Overcoted and Finger-proof**

You can't blame girls for complaining when hands and clothes get stained from hectograph carbon . . . especially when they know it's so needless now.

Underwood Corporation has put an end to this nuisance of stains and smudges.

The new *Overcoted* Master Sets are *finger-proof* and stainless. They eliminate stained hands and clothing, avoid need for special stain-removing soaps and cleaners.

Change to Underwood Corporation Masters! That's the easy way to overcome employee reluctance to use hectograph carbon.

Prove it FREE. Just ask on your letterhead for free samples. Please specify purple, black, or blue.

In addition:

Underwood Corporation Hecto Master Sets and Hectograph Carbon Papers give *sharper masters*, more and better reproductions.

There are no typewriter feed roll smudges . . . you have uniform intensity of type characters. "Summerized," too! Even on the hottest, most humid days, reproductions are sharp, crisp—and, of course, *free from stains!*



**The Key
to Better Impressions**

©1951

Underwood Corporation

One Park Avenue
New York 16, N. Y.
Supply Division
Burlington, N. J.

Modern Equipment Important Factor to Reducing Office Maintenance Costs

● By G. L. Dory, Superintendent of Plant Sanitation, U. S. Rubber Company, Detroit

OUR sanitation workers are always given credit for a job well done, and are also told when a job is not properly done—a little encouragement goes a long way in getting good work from a worker.

Three years ago, he said, we had some 165 people doing the janitor work in the Detroit plant. By using improved methods and eliminating unnecessary operations, we have been able to reduce our force to 113 people and are doing a much better job than before. The use of modern equipment has contributed greatly to cost reduction.

Office sanitation work is done at night after office hours. Waste paper baskets are emptied, desks either wiped off or washed, floors mopped and waxed as often as is necessary to maintain proper conditions. In some areas it is necessary to wax more often than others, owing to the use the floor receives. Weather conditions have much to do with the frequency of cleaning operations.

We use a buffing machine after wax applications and often buff floors two or three times between wax applications. Wax is removed occasionally by using trisodium phosphate and hot water after which we take up the remover and re-wax and start all over again. This procedure is used on rubber and asphalt tile. On red masonry tile or Welsh tile, we find that by cleaning with a produce known as Move-all concentrate, we do not need to wax. The tile dries with a gloss that will last several days under normal conditions.

We have no wood floors to speak of. Concrete or terrazzo floors are treated the same way as is the Welsh tile.

Wall washing operations vary with the kind of walls and the place and condition of the walls. Where

Acoustical walls and ceilings are not washable, and are cleaned by vacuum brush or wallpaper cleaner. The lighting system in this office was designed by Sylvania Electric Products, Inc.



In some areas it is necessary to wax more often than others owing to the use the floor receives. Weather conditions have much to do with the frequency of cleaning operations.

walls are slightly soiled, a weak solution of trisodium and water will solve the problem. Where walls are very dirty, we increase the strength of the solution. Rubber gloves are worn by wall washers when washing walls.

Acoustical walls and ceilings are not washable and are cleaned by vacuum brush or wallpaper cleaner. Most any cleaning operation on acoustical material has to be followed by a light coat of paint. The paint should be either sprayed on or painted by hand with a dry brush.

Tile walls, Marlite or enamel walls can be very readily cleaned by the use of a free rinsing liquid soap and warm water, after which a clean damp sponge can be passed over the

surface to remove any excess soap and rinse the wall.

Trisodium phosphate is the main cleaning agent used in our cleaning operations. We have used various cleaning agents but, in general, trisodium has proved best.

Toilet bowls, urinals, etc. are cleaned once each week with acid to eliminate calcium deposit and prevent offensive odors. We do not believe in deodorizers to cover up the odor; we would rather eliminate the odor itself.

Abstract of address at Plant
Maintenance Show in Cleveland



St. Louis, Mo. "I get my work out twice as fast with my IBM Electric. Better carbons and nicer results, too."



Jacksonville, Fla. "My speed has picked up at least 40 words a minute now that I have an IBM Electric Typewriter."



Seattle, Wash. "I can type on my IBM Electric for hours without getting tired."

Letters of Credit*



New Brunswick, N. J. "My secretary turns out letters I'm proud to sign, proud to have represent me and my company. She types so much faster, too, that now she can relieve me of much of my regular routine work."



* Excerpts from unsolicited letters.



Electric Typewriters

INTERNATIONAL BUSINESS MACHINES CORPORATION

IBM, Dept. PR-1
590 Madison Ave., New York 22, N. Y.

- ☐ I'd like to see a demonstration of an IBM Electric Typewriter.
☐ Please send descriptive folder.

Name _____
(please print)

Company _____

Address _____

Electronic "Thinking Machine" Developed by Northrop

A new type of compact electronic "thinking machine" which can surpass the efforts of a thousand expert mathematicians working simultaneously has been developed by engineers of Northrop Aircraft, Inc., Hawthorne, Calif.

Latest of the "magic brain" elec-

tronic computers, the newly developed machine is known as "Maddida"—pronounced "mad Ida." It is smaller than an average office desk, yet its mathematical capacity places it in a class with the warehouse-size computers used by a few large universities.

The term Maddida is a coined word developed from "Magnetic Drum Digital Differential Analyzer" which is the full descriptive name for the computer. Northrop scientists who developed the machine say it is able to:

Solve in a few seconds problems so complex that months or even years would be required to work them out on standard desk calculating equipment;

Perform automatically many vital operations in running a factory, for example, a chemical processing plant—by picking up information from

instruments and then using the information to run machinery. Maddida can evaluate information and make decisions, controlling valves, thermostats, stokers, tank levels, rates of flow and so on;

Predict the best design for a particular airplane before a single blue-



Desk size, weighing 400 pounds. Maddida can also predict the best size for an airplane or a ship, navigate and guide a rocket airplane, or operate a factory production line.

print is drawn;

Operate at an accuracy of one part in 100,000,000.

Other outstanding factors are its compactness and low cost.

The first production model was built by Northrop for the Experimental Towing Tank of the Stevens Institute of Technology in Hoboken, N. J. It will be used by the institute in predicting the best designs for ship hulls, and for stability and control investigations on hydrodynamic bodies, including anything that moves in and on the water, such as torpedoes, underwater rockets, submarines, ships, PT boats and flying boats.

Development of the new machine, says Northrop, enables nearly any organization engaged in activities requiring large-scale mathematical studies to acquire automatic computing equipment.

Decorated in a simple, modern style by E. K. Gebhart, display manager, the meeting room is comfortably appointed with auditorium-type, springback, mohair upholstered seats and individual, fold-away tablet rests.

The 20" high stage has a sound-deadening cork floor, projection

screen with draw-type curtains and two banks of overhead strip lighting with dimmer. A public address system has also been installed with a control panel. The Ampro 16mm projector is equipped for sound.

An unusual feature is a specially constructed lectern believed to be the only one of its kind. The lectern has been made in two sections of natural finish birch wood. Thus, it can be used as a single unit or the top section removed and placed on table. A series of slots within the top section permit any convenient arrangement of shelves.

The auditorium will be available for use by business groups or associations. Reservation requests should be made to Walter P. Lindsey, general manager, Sales Service Department, Remington Rand Inc.

1 1 1

NPA PERMITS DO ORDERS FOR OFFICE EQUIPMENT

The National Production Authority has modified its regulations to permit the issuance of defense rated (DO) orders for the procurement of commercial office equipment and supplies and certain miscellaneous items by the Defense Department, Atomic Energy Commission, National Advisory Committee for Aeronautics and the Coast Guard.

Previously NPA did not permit these agencies to issue DO ratings for the purchase of commercial office equipment and supplies and other non-industrial miscellaneous items. They now will be permitted to issue DO ratings for these items when they find it necessary to do so. NPA explained that some of the agencies had been having difficulty in obtaining paper stock for continuous forms for mechanical office equipment, field manuals and tactical maps.

1 1 1

IBM TO DOUBLE SIZE OF POUGHKEEPSIE PLANT

A manufacturing expansion program approximately doubling the size of its Poughkeepsie, N. Y. plant has been announced by Thomas J. Watson, chairman of the board of International Business Machines Corporation. Two additional three-story structures will add 632,000 square feet of floor space area necessary for the production of preparedness program contracts and are being built under a necessity certificate granted by the U. S. Government. When the additions are completed the plant, located on Route 9 south of Poughkeepsie, will have approximately 1,200,000 square feet of manufacturing floor space.

REMINGTON RAND MAKES N. Y. AUDITORIUM AVAILABLE TO BUSINESS GROUPS

Remington Rand announces the formal opening of a 165-seat auditorium with facilities for customer seminars and group meetings at its New York headquarters, 315 Fourth Avenue, New York.

BURROUGHS OFFERS WINDOW MODEL ACCOUNTING MACHINE

A "window accountant," new model of the recently released Burroughs Sensimatic accounting machine, has been announced by the Burroughs Adding Machine Company, Detroit 32, Mich.

Designed specially to handle window accounting transactions, the new machine embodies all the advantages of the revolutionary "Sensimatic" control principle. New standards of automatic operation are achieved through a system of pre-set controls contained in "sensing units."



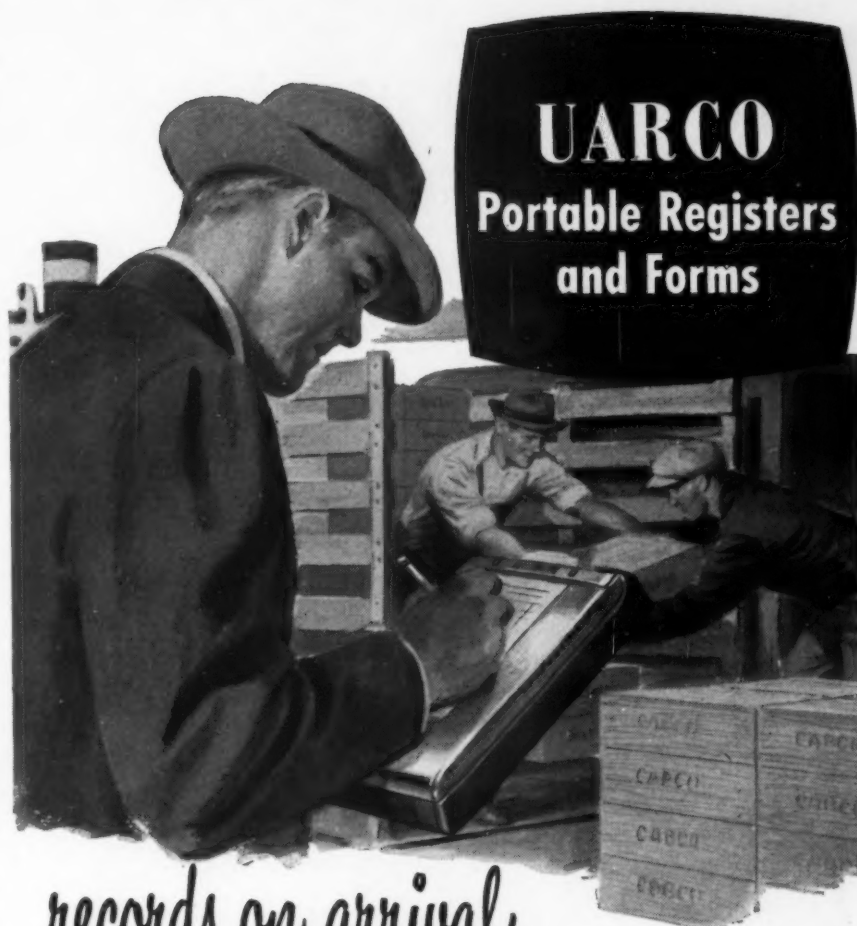
Among the new features of the machine is a "teller lock" which permits individual operator control and responsibility for all transactions handled on the machine. In addition, a locked control key cover provides protection against unauthorized adjustments or changes in the totals accumulated in the machine. Keyboard changes have been made to insure further protection, and newly styled plastic guides make the insertion and removal of passbooks easier.

A new high stand has been designed for the machine, offering greater convenience at windows where operation is from a standing position. The machine may also be used on the counter, or fitted compactly into a well cut into the counter. A regular stand or posting desk may also be used, where desired.

FIRE LOSSES DURING 1950 PLACED AT \$688,000,000

Fire destroyed an estimated \$688,460,000 in American property during 1950, according to Lewis A. Vincent, general manager of the National Board of Fire Underwriters, 85 John St., New York, N. Y. The losses ranged from a low of \$45,922,000 in September to a high of \$72,468,000 in March. In 1940, fire losses were estimated to be \$285,878,000.

(Please turn to page 194)



records on arrival for everyone concerned!



expediter



accounting



purchasing



department ordering

Four of them—see at left—for four people in your firm, the same day a shipment arrives. And made in a single writing on a Uarco Portable Register!

Portable means on-the-spot writing, and this handy register goes anywhere your clerk goes on the receiving dock. Loaded with Uarco Receiving Report Forms *pre-printed* so that the writing is greatly simplified and speeded up. Uarco designs these forms to supply full information. Each copy is labeled and colored for fast office routing.

Result: prompt action and notification to all concerned. The right people know what has come in . . . where it's stored . . . and they know it right away!

Uarco designs these Receiving Report Forms to meet *any* special requirements. To break up *your* receiving dock bottleneck . . . call a Uarco Representative, today.

Factories: Deep River, Connecticut; Cleveland, Ohio; Chicago, Illinois; Oakland, California—
Sales Representatives in All Principal Cities



BUSINESS FORMS

UARCO Incorporated
Room 1619, 141 W. Jackson Blvd.
Chicago 4, Illinois

Please send samples of Uarco Receiving Report Register Forms.

Name.....Firm.....

City.....State.....

The Most Practical Best Performing Desk Pen Yet Devised



Esterbrook 444 DESK PEN SET

"Ink-Locked" against
accidental spillage. In
black, clear, green,
gray, maroon.



1. The world's largest variety of point styles gives you the right point for the way you write.
2. Fill it once—write for months. Base holds 40 times as much ink as ordinary desk fountain pens.
3. In case of damage, you can renew your point at your dealer's in 30 seconds.

*Get a demonstration any-
where fountain pens are sold.*

THE ESTERBROOK PEN COMPANY
CAMDEN, NEW JERSEY



1554 Clerical



9461 Fine Manifold



1550 Bookkeeping



1555 Shorthand



2968 Broad writing



9668 General writing



MODEL 407 DIP-LESS DESK PEN

Extra large base holds two
ounces of ink. Can't leak
—won't flood. Visible ink
supply.

Esterbrook®

AMERICA'S FIRST PEN MAKER

Copyright 1951, The Esterbrook Pen Co.

MACHINE FOLDS UP TO 19,000 SHEETS PER HOUR

Folding paper for various purposes is a tiresome task faced by most offices. Miller-Trojan Company, Inc., Troy, O., has a new Model 12 paper folder designed to do the job quickly and efficiently.

The machine will fold bond, ledger, book, coated or uncoated stock at the rate of 19,000 per hour maximum. It is the 3-pan style making a variety of 12 distinct types of folds possible. It can be adjusted to fold sheets from 2½" x 3" minimum to 8½" x 15" maximum.



The folder has side guards of cast aluminum for strength and durability. Feeder, stacker and fold pans are chrome-plated for longer wear. The machine has an attractive grey wrinkle finish. Feeder and stacker are located at the same end to save time and steps.

1 1 1

TO EASE DO ORDER PRESSURE ON BUSINESS FORMS MAKERS

The National Production Authority will soon take steps to relieve producers of business forms from the large number of rated orders which may be placed on the industry as a result of NPA's recent MRO order.

Industry representatives have pointed out that military needs since Korea have been added to an already near-capacity demand for paper forms. Now, they state, under the provisions of NPA Regulation 4 (MRO), their products are classed as operating supplies, so that virtually every order they will receive will carry a DO rating. This is expected to interfere with filling of other defense rated orders.

An order patterned on the NPA paper order, M-36, providing for a fixed percentage of forms production to be set aside for defense rated DO orders, will probably be the solution, according to the agency officials.

Members of the Continuous Forms Industry Advisory Committee declared that they are expanding facilities for increased forms production. They pointed out that the 186,000 tons of paper they used in 1950 represents a 35% increase over that used in 1946. Industry representatives said they are faced with a shortage of skilled manpower for producing their products, which include sales books, paper lithograph plates, register supplies, teletype paper rolls, targets, and other paper supplies for office machines. They said they are also having difficulty obtaining presses, which must be built to their specifications.

McBEE NAMES BROOKS
SEATTLE DISTRICT MANAGER

Warren B. Brooks has been named district manager of The McBee Company in Seattle, Washington. He joined his company in 1948 as a salesman in Los Angeles and served there until his recent promotion. Brooks, a member of the National Association of Cost Accountants, has a wide experience in accounting and production control.

PROTECTIVE LIGHTING URGED AS
GUARD AGAINST SABOTEURS

Modern protective lighting techniques should be adopted at once by American industry to protect the nation's plants against the danger of sabotage, warns Mr. Dana W. Rowten, Westinghouse Electric Corporation.

Speaking at the recent New York joint meeting of the Illuminating Engineering Society and American Institute of Electrical Engineers, he emphasized that U. S. industry is an enemy's number one target.

To reduce danger of sabotage, Mr. Rowten advocated a "find 'em, blind 'em" lighting technique that floods light on the would-be saboteur while blinding him with glare. He listed four basic jobs of protective lighting: (1) discourage attempts at entry; (2) make detection a certainty should entry be effected; (3) aid the guard and hinder the intruder in every way; (4) provide complete reliability.

Mr. Rowten stressed importance of a carefully-engineered protective-lighting system. Failure of a single light should not leave a dark vulnerable spot. "Overlap of coverage" avoids such vulnerability. Also, he added, power supply, wiring, and control equipment should be arranged for complete reliability.

(Please turn to page 196)

YOU accomplish more with the right approach!



(like for example, in business systems forms)

Where's the efficiency in typing a purchase order—retyping a production order—retyping this form—retyping that form? You're right, there isn't any!

With today's stratospheric cost of doing business, every unnecessary finger-twitch whacks a goodly chunk off the profit margin. That's why you find so many businesses (small and big) designing their paper work around the COLITHO "one write" idea.

You use a COLITHO offset master plate as part of the original form. The plate is assembled with COLITHO duplicating carbon so that the master plate is prepared when the form is originally filled in. Then the COLITHO plate is put on an offset duplicating machine and all the additional forms (hundreds if you need 'em) are run off.

The savings in labor are considerable and the elimination of transcription errors has a very real value. And you can file the COLITHO plate for future use. Variables can be provided for and deletions, or additions to record work progress or shipping schedules, can be made at will. In addition to form work, COLITHO plates are the best all-around master for office offset duplicating.

The coupon below—without a box-top—entitles you to free samples of COLITHO plates and complete information about their many cost-saving uses.



COLUMBIA RIBBON & CARBON MFG. CO., Inc.

Main Office & Factory:

150-4 Herb Hill Road, Glen Cove, L. I., New York
New York Sales and Export: 58-64 West 40th Street
Branch Offices and Distributors in principal cities
Consult your local Telephone Classified Directory



Colitho

OFFSET MASTER PLATES

A "one write" system
that expedites your paper work.

75% to 90% LABOR SAVINGS—This 63-part purchasing form of a leading steel company demonstrates the scope of a COLITHO "one write" form. In addition to statistical work reduction, one handling operation was completely eliminated.

COLUMBIA RIBBON & CARBON MFG. CO., Inc.,
150-4 Herb Hill Road, Glen Cove, L. I., N. Y.

P-4

Please send me samples of COLITHO MASTERS.

Name _____ Title _____
Company _____
Address _____
City _____ Zone _____ State _____
Make of Duplicator _____ Model _____
Plate Size _____ Clamp Style _____



**Check your No. 1 objective
for 1951**

Better control of operations

**Postindex
will give you better control**

It's the simple, easy, fast, flexible system of visible records—

"If you think your present method of keeping inventory records can be improved, investigate the Postindex Zero Balance System—to improve your control of parts stocks this year and every year."

Postindex puts needed facts at your fingertips—facts on production, inventory, sales, purchases, costs, credits, personnel, payroll—for any department of your business.

For catalog and sample forms write, specifying record function, to Postindex Division, Art Metal Construction Co., Jamestown, N.Y.

These many exclusive points make Postindex the most efficient, least costly method of *visible* record keeping available to business and industry.

- Four sides to write on
- Self-aligning trunnion wire
- Easy shifting
- Constant visibility
- Optional multiple records
- Perfect lay-back

"There's an **Art** to Better Record Keeping"

Postindex

VISIBLE FILES

Product of



TYPEWRITER GAGE INDICATES EXACT POSITION OF PAGE

Smith-Corona's latest innovation in the typewriter field is the Page-Gage. It indicates exactly how near the typist is to the bottom of the page. The gage is a feature of Smith-Corona's recently announced new Series 6 office typewriter.

The device consists of two graduated rings attached to the typewriter platen. The typist simply adjusts the movable rings to the size paper she is using, and the gage does the rest. When the typist is $2\frac{1}{2}$ " from the bottom of the page, a red signal appears on the outer scale. To within one-half inch of the paper's end, the graduated scale gives the typist her exact position. The scales are graduated for paper lengths 7" to 14", but the device may be adjusted for shorter or longer sizes if necessary.

1 1 1

NEW PROCESS MAKES OLD, UNUSABLE DECALS LIKE NEW

Large stocks of decals which have warped, cracked and faded in storage can now be reclaimed "like new".

The "Rem 69" process can salvage the greater percentage of decals which are now being discarded. This process can be used on all types of decals. Literature available by writing to Rembrandt Decalcomania Company, 4602 South Kedzie, Chicago 32, Illinois.

1 1 1

BAKED ENAMEL FINISHES BRIGHTEN METAL FURNITURE

With the manufacture of chrome-plated furniture restricted because of defense allocations, baked enamel finishes in a variety of colors are coming into their own on metal furniture.

The immediate result of this new trend, which has been gaining ground steadily in the past few years, is that interiors of all sorts will take on new, colorful beauty. The great variety of hues available in baked enamel provides attractive blends with any type of room decoration.

While chrome-plating gained prominence and popularity because of its bright appearance and durability, there has been a slow but sure trend towards more colorful furniture, especially metal furniture which has proved so practical for commercial and professional interiors of all types. It is expected that the shortage of copper and nickel for chromium finishes will spur the use of heat-treated enamel finishes greatly. Their practicality and durability

have already been proved in laboratories and numerous installations.

Interior decorators especially are expected to welcome the new prominence of enamel finishes on tubular metal furniture because of the new color schemes which can be blended. One Chicago manufacturer alone has 29 different hues available in these durable baked enamel finishes, ranging from gold and fawn through various shades of red, green, blue, silver and brown.

NEW BALL POINT PEN IS PENCIL-STYLED

The new low-priced Ink-Pen-Cil is said to combine the features of a ball point pen, fountain pen and ordinary lead pencil. It is the same size as an ordinary hexagon-shaped



lead pencil, perfectly balanced for permanent legible writing. Its sharp point is permanent, and it lasts longer than 12 pencils. It is described as 60% cheaper than pencils by actual writing machine tests. The pen has purple blue ink and can be used for checks and documents. Made by Fisher Pen Company, 757 Waveland Avenue, Chicago 13, Ill.

SHEET-FED GRAVURE FOR CARTON PRINTING GIVES EXCELLENT REPRODUCTIONS

That unlimited types of art can be used on cartons, with the assurance of absolute fidelity of reproduction on boxboard, was recently demonstrated to a group of package designers who visited the Piermont, N. Y. plant of Robert Gair Co., New York, which is the only plant in the country producing sheet-fed gravure for folding cartons. It was shown that sheet-fed gravure printing gives unusually faithful color reproduction of subject drawn, or depicted by photograph, providing brilliant depth and range of color values. Gravure presses in the Piermont plant were especially designed and built for paperboard printing.

(Please turn to page 198)

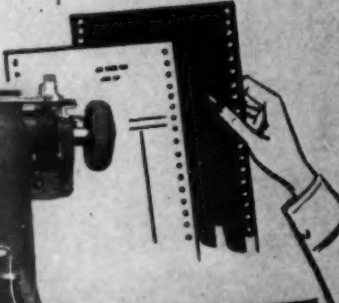
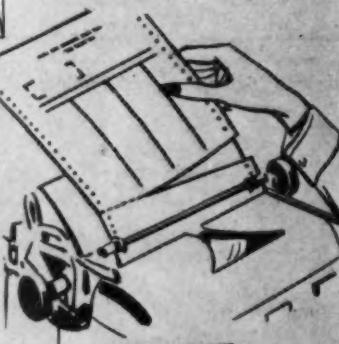
Are Your Record-keeping Costs TOO HIGH

It's easy to pour profits down the drain if record-keeping costs are higher than they should be! Many concerns use 8, 9, 10 or more copies of business forms for various departments. With ordinary forms it takes TWO GIRLS and TWO MACHINES to accomplish what ONE GIRL can do easier, quicker, better—at less cost—with American LITHOSTRIP continuous forms!

THE OLD WAY...and the NEW!

The old, laborious way requires 9 steps to handle one set of record-keeping forms...collating, interleaving carbon, jogging sheets, inserting, aligning, turning roller, typing, removing forms and delevaing carbon. With American LITHOSTRIP continuous forms, as shown at right, it's 1-2-3...type, tear off, zip out the carbons!

If you use Invoices, Purchase and Shipping Orders, Voucher Checks, Credit Memoranda, Teletype or Tabulating Forms, Sales and Manufacturing Orders... SEND FOR A FREE COPY of our latest folder that tells how to cut forms handling costs 33% or more!



AMERICAN LITHOFOLD CORP.

500 Bittner Street • St. Louis 15, Missouri

Gentlemen: Send me a FREE copy of the brochure that reveals how to get better results—in less time and at lower cost—through up-to-date business methods.

COMPANY NAME.....
ADDRESS.....
CITY.....ZONE.....STATE.....
SIGNATURE.....

Write Today!

**For Papers of
Extraordinary
Quality for
Extraordinary
Use**



IT ISN'T SURPRISING—THAT PRINTERS SAY RISING!

For papers of superb color, texture and surface,
you can take your printer's word for it—

"Rising" has just the one for whatever the
occasion—whatever the price requirement.

Rising

Winsted • Hillsdale
Platinum

Papers are available in a wide
range of sizes, weights and fin-
ishes, for every engraving and
printing process that requires that
extra touch in reproduction.

**WHEN YOU WANT TO KNOW
...GO TO AN EXPERT!**

Rising Papers

ASK YOUR PRINTER

...HE KNOWS PAPER

Rising Paper Company, Housatonic, Mass.

**REDIFIXT
BUSINESS FORMS
CARBON INTERLEAVED**

Continuous or Single Sets

Invoices • Sales Slips

Shipping Records • Accounting
and Tabulator Bookkeeping

Machine Forms • Any Form for
Any Business Purpose

**NO PRICE RISE ON
RediFixt
W-2
TAX FORMS
for 1951**

*Consolidated
Business Systems, Inc.*

DEPT. 006
30 VESEY STREET, NEW YORK 7

*stands up
under pressure*



An Omega lead takes a lot of
pressure without breaking...thin,
lead holds a needle point, makes
clean, sharp figures with lightest
pressure. 24 brilliant colors, ends
colored for quick selection. Ask
for sample on your business
letterhead.



The Omega is a Tryrex
Pencil — shaped to fit your
hand — will not roll.

RICHARD BEST PENCIL CO.
Dept. P Springfield, N. J.

OMEGA
COLORED PENCILS

Makers of
ROYAL SCOT and FUTURA Pencils

**W. F. BERNART ELECTED
DIRECTOR OF PITNEY-BOWES**

William F. Bernart, executive vice
president of Pitney-Bowes, Inc.,
Stamford, Conn. has been elected to
the company's board of directors,
Walter H. Wheeler, Jr., president
and director, announced here today.

A graduate of Cornell's College
of Engineering, he joined the post-
age meter and business machines
company as a research specialist in
1935, became manager of its first
research department in 1939, execu-
tive assistant to the president two
years later, and was elected execu-
tive vice president in 1944. He has
played a leading role in the develop-
ment of PB's tax-stamping meters
and other new products; and during
World War II designed major ele-
ments of the anti-aircraft equipment
developed by the company.

**STURDY PLASTIC BINDER
PROTECTS CATALOGS, ETC.**

Catalogs, portfolios, and the maga-
zines usually kept in business office
reception rooms can be kept clean
and attractive with a new plastic
binder made by Bro-Dart Industries,
59 E. Alpine St., Newark, N. J.

The binder, known as the Plasti-
Kleer deluxe periodical binder, is
constructed entirely of one piece of
sturdy (40 gage) Vinylite trans-
parent flexible plastic. The binder
holds the periodical firmly in place
by means of a simple metal "lock-
fast" device. Magazines can be
changed in 30 seconds.

**FOLDER SHOWS FIFTEEN COLOR
VARIETIES OF SCOTCH TAPE**

Fifteen color varieties of indus-
trial tapes are shown in a new fold-
er on "Scotch" brand pressure-sen-
sitive tapes, issued by the Minnesota
Mining and Manufacturing Co., 900
Fauquier St., St. Paul 6, Minn. The
four page color chart includes de-
scriptions of eight different tapes
ranging from plastic film tape for
sealing bottles of chemicals and
drugs, to filament-reinforced tape
for heavy-duty palletizing and bund-
ling of cartons and metal objects.
Other tapes include cellophane tape
and two moisture-resistant acetate
fibre tapes for use in making printed
packaging tapes; and a film laminate
tape for identifying and labeling
tires and other rubber goods. In
addition are a third acetate fibre
tape for edging documents and per-
manent splicing of paper, and an
acetate film tape for special film-
splicing and reinforcing.

BRITISH PLATEN PRESS OFFERED TO U. S. MARKET

The "Thompson-British" automatic platen press (shown above in front view) is one of the many developments in printing machinery and equipment which will be displayed for United States and other overseas buyers and purchasing agents at the forthcoming British



Industries Fair to be held in London and Birmingham, April 30 to May 11, 1951. This press handles 2500 to 4500 sheets per hour. The press is designed and made by T. C. Thompson & Son, Ltd., of Manchester. Fifty-four manufacturers of printing machinery and equipment will display their products at the Olympia Hall section of the British Industries Fair in London.

1 1 1

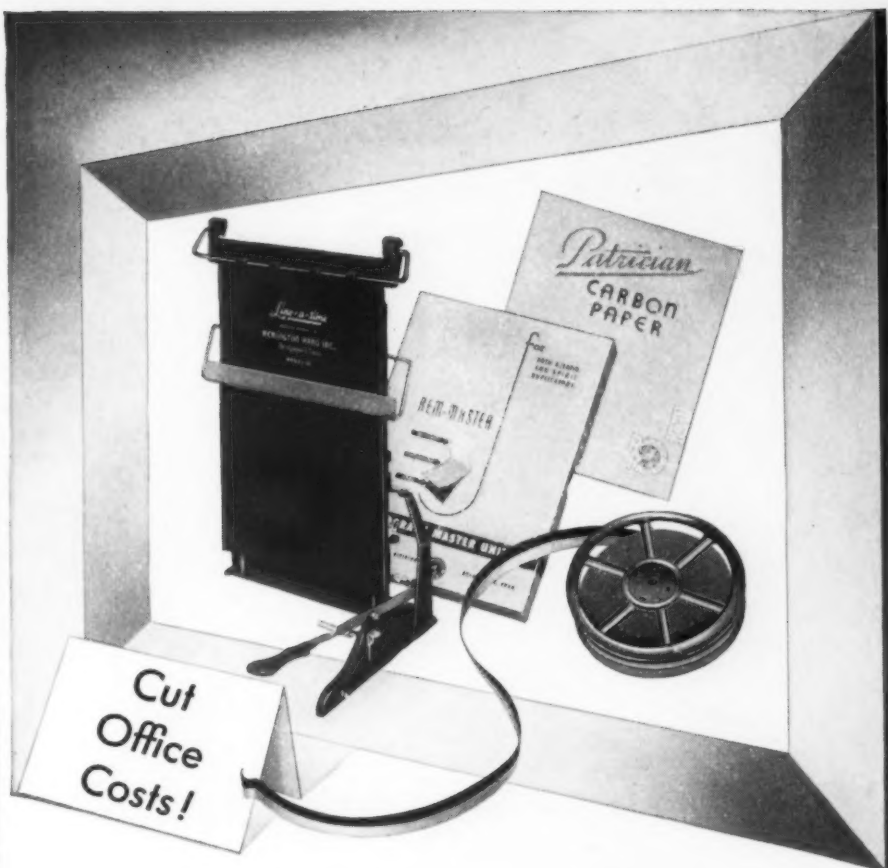
MANUAL ON EMPLOYEE FEEDING POLICIES AND PROCEDURES

Newly published 92-page manual covers policies and procedures for setting up and operating an efficient employee feeding facility. It is designed for industrial plants, big office organizations, hospitals, colleges, and other institutions undertaking employee feeding for the first time or desiring to check their current operations for improvements and economies. The manual is arranged to be of service to top executives and to managers, and its material may be applied to defense and wartime emergency feeding requirements as well as to peacetime conditions.

The main sections of this book by John W. Stokes include: The Food Organization, Location, Equipment, Purchasing, Receiving, Storage, Food Preparation, Cooking, Food Cost Control, Labor Cost Control, Accounting, Developing Patronage, Care of Equipment, and Preventive Maintenance.

The manual is published by E. S. Whitten, Inc., 216 Tremont St., Boston 16. Price is \$3.00.

(Please turn to page 200)



Portrait of office economy

Remington Rand office supplies are important necessities to any business office. The savings they make possible add up to a sizable slash in your annual operating costs.

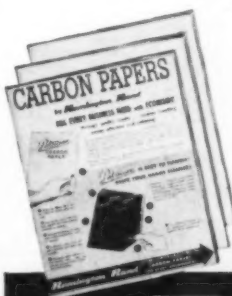
Take typing aids and supplies—here are some money-savers with a payoff in real economy:

Line-a-time Copy Holder. Tests show far less operator fatigue, materially increased typing production with this typists' aid to natural-line-of-vision.

Nyllex—All Nylon Typewriter Ribbon. Breaking all records for longer wear . . . amazing new ribbon economy with executive calibre impressions.

Job-Fitted Carbon Papers. For every preference and purpose—cleaner letters and forms, clearer multiple copies—with exclusive Magic Spot sheet selector.

These and other Remington office supply products are the result of careful analysis of business office needs. Inquire now for details—your savings will begin that much sooner!



Remington Rand

Business Machines and Supplies Division, Room 2030, 315 Fourth Ave., New York 10.

We would like to have information on the following:

- ☐ Line-a-time ☐ Nyllex Typewriter Ribbon ☐ Carbon Papers
☐ Rem-Masters (Hectograph Supplies)

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____



Well Dressed Man

*if the clothing industry kept **NO RECORDS***

A man would be lucky if he had any clothes—if no one in the clothing industry kept records. Records and the people who keep them are as essential to the clothing industry as fabric. You cannot run any business without records.

For every record your business depends on there is a Boorum and Pease form or device to keep it more accurately, more easily. Boorum and Pease designs and develops better forms and equipment so that management may have the facts it needs to run a business efficiently.

B&P NoTear® Sheets and Indexes for loose leaf books are an example. A tough muslin strip, "welded" onto each sheet by an exclusive process, prevents tearing—saves retyping and replacing sheets. No danger of losing valuable data. Have your stationer show you the complete NoTear line.

FOR EVERY RECORD — A WAY TO KEEP IT



BROOKLYN 1, N. Y.

CATALOG DESCRIBES VARIETY OF TIME CARDS AND RACKS

Expanding production and growing payrolls have intensified personnel timekeeping problems. To help meet them, Acme Publishing Co., 36 E. 23rd St., New York, N. Y., has issued a new 1951 catalog containing large, clear-cut illustrations and descriptions of 78 different time cards. Each card is numbered and named for quick identification, and the accompanying price list permits ready reference. Time card racks and accessories are also shown.

1 1 1

USE OF LABELS SPEEDS ADDRESSING BY 27%

Eureka Specialty Printing Company reports that time checks show addressing by means of its Dupli-sticker labels averages 27% faster than addressing envelopes. Typists address 4 or more copies in operation on letter-size sheets of 33 gummed and perforated labels. The labels have uniform, stick-fast gumming. A free sample package of Duplistickers is available from Eureka at 552 Electric St., Scranton, Pa.

1 1 1

PRODUCTION AND INVENTORY CONTROL QUESTIONS ANSWERED

Quick and accurate answers to production and inventory control questions is the aim of a new Remington Rand 40 page booklet. This free guide, "Production Control in Manufacturing Industries," offers a remedy for bottlenecks in production before they become acute. Requests for the booklet—TM-596—should be addressed to Management Controls Division, Remington Rand Inc., 315 Fourth Ave., New York 10, N. Y.

Efficient and accurate record-keeping management to assure continuous and uninterrupted production flow is high-lighted in the booklet. Punched card methods are shown for every phase of production control including: engineering records and procedures, production and forecasts, materials controls scheduling and progress reports.

Not only the general phases of production control are explained but also the major flow functions. The "how" of scheduling defense orders for regular as well as new productions without delay or disorganization, processing production orders according to schedule, accurate delivery dates based upon correct information on raw materials and machine facilities, are all covered

DICTAPHONE TIME-MASTER CUTS RECEIVING TIME

The headache of troublesome Parcel Post shipments has been greatly reduced through a unique new listing system now in operation at J. L. Hudson Company, Detroit. Featuring the Dictaphone Time-Master, savings of 81.6 man hours per month are reported since the adoption of the new method.

Using the Dictaphone Time-Master, the receiving clerk now calls out information on each package instead of writing it down. Facts such as shippers name, point of origin, insurance number, amount of postage, etc., are "talked" into a lightweight chest microphone; the report is recorded on a Dictaphone Time-Master and Memobelt record located nearby.

The Memobelt is then sent to another office where the receiving record is typed and filed for audit. Hudson's streamlined new system reduces the time spent by the receiving clerk on each package by 7 seconds.

1 1 1

SHORTAGE OF WASTEPAPER BECOMES MORE ACUTE

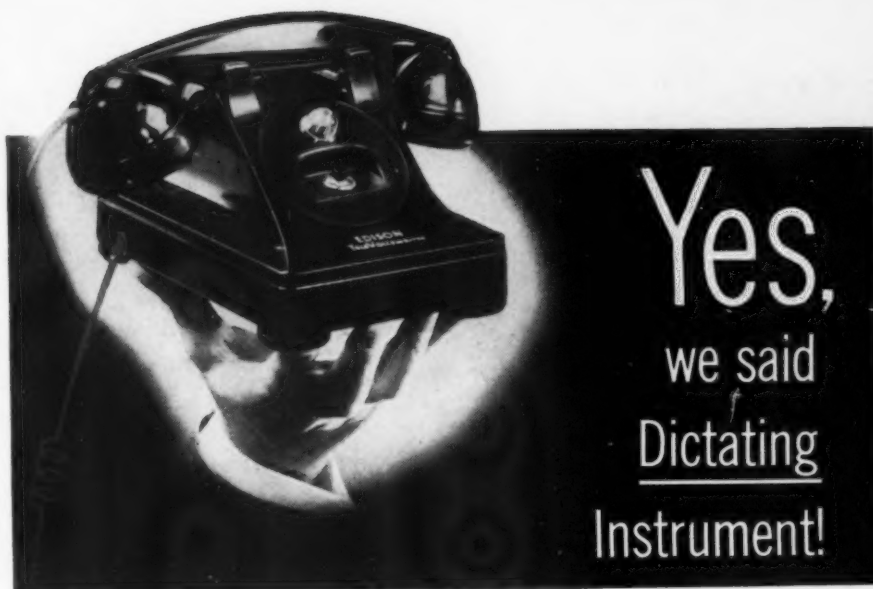
A severe shortage of waste paper, especially old corrugated boxes, brown wrapping paper and bags exists today. Unless the supply of these Kraft pulp substitutes is increased, the supply of paperboard will become even more acute, warns Frank Block, director, Public Relations Committee of the Midwest Consumers of Wastepaper.

Old corrugated boxes, Kraft papers and bags are the best sources, next to wood pulp, of strong fibre materials needed for the manufacture of paperboard products. More old corrugated and kraft will be needed for paperboard manufacture during the months ahead. This is reflected in government requirements.

At present, only about 20 per cent of the corrugated now manufactured finds its way back as waste paper as compared to much higher percentages for old newspapers and magazines. The supply of this vital raw material must be increased. Reports from many sections of the country are that industrial plants and retailers, while pressing for increased packaging supplies, are destroying the raw material from which this packaging is made.

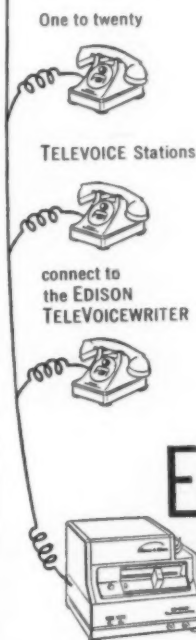
If we are to meet civilian and war requirements, the destroying of essential raw material must stop.

(Please turn to page 202)



Yes,
we said
Dictating
Instrument!

The world's Smallest! Handiest!
Simplest! at $\frac{1}{3}$ the cost!



An Edison first, perfected after more than six years of proof on the firing line! Winning the most sensational acclaim in the history of instrument dictation! Easy to use as a telephone! Complete, remote control by push-buttons! "Delivers" dictation to EDISON TELEVOICewriter at *secretary's* desk. Cuts cost of instrument dictation *as much as 66 2/3%!*

Edison TeleVoicewriter The Televoice System

GET THE WHOLE STORY—NOW! Send for this new descriptive booklet. Or, to arrange for a demonstration, call "EDIPHONE" in your city. In Canada: Thomas A. Edison of Canada, Ltd., Toronto 1, Ontario.

Thomas A. Edison
INCORPORATED



EDISON, 58 Lakeside Ave., W. Orange, N. J.
Okay—send me a LINE ON TELEVOICE.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

around the world
via **AIR MAIL**

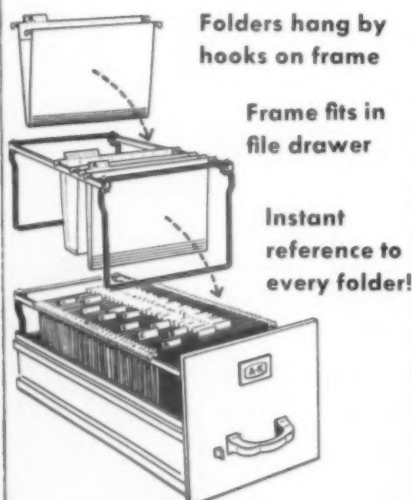


Multi-lingual with the Sheppard
AIR MAIL ENVELOPE

Sheppard
ENVELOPE CO.
1 Envelope Terrace
Worcester 4, Mass

Write today for Free Progress Folder. Only
Sheppard has Mint-E-Seal flavor flaps.

Don't File It — HANG IT!
IN **Oxford PENDAFLEX®**
HANGING FOLDERS
Cut Filing Costs 20% or More!



Send for Catalog

OXFORD FILING SUPPLY CO., INC.
Clinton Road • Garden City, N. Y.

Burroughs Head Calls Unity Greatest Deterrent to Reds

The key to our survival against the encroachment of Communism "lies in the integration of the western nations—politically, militarily and economically," according to John Coleman, president of the Burroughs Adding Machine Company.

Speaking at the 47th annual Chicago World Trade Conference, jointly sponsored by the Chicago Association of Commerce and Industry and the Export Managers Club of Chicago, Mr. Coleman said his company has begun an ambitious program of building assembly and manufacturing plants abroad.

This expansion was begun in the face of threatening war, he said, because the greatest deterrent to the aims of the Soviet Union would be an Atlantic community politically and economically united. Traditional economic barriers between nations must be removed and business must move into foreign areas if it is to avoid the strangling influence of the present economic unbalance in the world, he said.

Pointing out that all peoples of the world today are seeking the capital and the techniques for modernizing their nations, Coleman warned that "the real question is, by what route—the American or the Soviet?"

"This grave challenge cannot be met by negative thinking," he said. "Enlightened self interest demands that we respond to those who ask our aid in widening their economic opportunities. It is not enough to

make loans and grants. It is not enough to deliver goods to the wharfside. We must also be prepared to offer the free world the know-how of technology, and just as important, of management and organization.

"It is in this spirit that we, in our relatively small company, are developing our world manufacturing system. We have come to governments with something to offer and they have responded in equal measure. And we propose to continue this policy."

The Burroughs company believes that the Communist tide can be contained—"provided we act," Coleman said. "One of the greatest obstacles to effective Western policy is men's uncertainty as to whether in fact peace can be maintained. Let us remember that the policy of the Soviet Union is built on the doctrine which assumes the inevitable collapse of capitalism. The Soviet Union does not wage general war. It waits for so-called capitalistic countries, weak and divided, to deliver themselves up."

He cited American successes in stalling the Communist march in Greece, France, Italy and blockaded Berlin as examples of effective use of military and economic power.

But there is also a need for spiritual leadership, he said. "We must counteract the shams of Communism. We must broadcast our vision of freedom, but first we must define it again ourselves."

Armed Forces to Explain Packaging Needs at AMA Conference

Packaging requirements of the armed forces will be explained to industry by representatives of the Army, the Navy, and the Air Force, at the American Management Association's three-day national Packaging Conference, April 17-19, at the Auditorium in Atlantic City. The conference will be held in conjunction with the 20th annual National Packaging Exposition, also under the auspices of AMA, which will be on view at the Auditorium for four days, April 17-20.

Speakers from the armed forces who will take part in the session on "Military Packaging Requirements" will include:

Colonel John A. Way, U. S. Air Force, Chief, Munitions Board,

Packaging Division, Office of Procurement Methods; C. K. Royce, Office of Naval Material; William D. Long, Chief of the Packaging Laboratory, Air Material Command, Wright Field, Dayton, Ohio; Captain C. E. Shafer, USAF Procurement Division, Headquarters Air Material Command, Wright Field, and two representatives of the Army.

Another session will be devoted to forecasting the available supplies of packaging materials—glass, foil, metal containers, paper, paper-board wood, film, and closures. "New Packaging Materials—Their Characteristics and Uses," will be discussed by Robert de S. Couch, head of packaging research for General Foods Corporation.

Case stories of how three companies are solving their packaging problems will be presented by Charles D. Mattingly, packaging engineer, The Coleman Company, Inc., Wichita, Kansas; C. E. Sherwood, industrial engineer, S. C. Johnson & Son, Inc., Racine, Wisconsin; and A. C. Benjamin, vice president, Junket Brand Foods, Little Falls, New York.

Other topics on the agenda for the three-day meeting are "Packaging Lessons From the Last War," "Significant Advances in Packaging Printing," Maximum Use of Packaging Equipment Through Proper Maintenance."

FACTORY FORMS STAY NEAT WITH PLASTIC ENVELOPE

A new type of job-ticket envelope is available from American Kleer-Vu Plastics, Inc. The heavy-duty envelope comes in non-inflammable .005 or .0075 gage cellulose acetate. Edges are protected with pyroxilin tape, strongly sewn all around.



Known as the KV1, the envelope measures 12" x 10½" (outside dimension) and is useful for protecting work orders, blueprints and shop cards from grease and grime. It may also be used for guarding sales literature, photos, and office records from general wear and tear.

More information and a free sample of KV1 is available from Department P, American Kleer-Vu Plastics, Inc., 58 Thames St., Brooklyn 6, N. Y.

REMINGTON RAND NAMES O. A. KENDALL TO NEW POST

Otis A. Kendall has been appointed assistant sales manager for tabulating machines, Management Controls Division, Remington Rand Inc., New York, N. Y. H. W. Milang is accounting-tabulating sales manager.

Kendall joined Remington Rand as sales representative in 1932 in Providence and was appointed tabulating branch manager there in 1935. He has been successively director of methods research, director of sales education and accounting-tabulating sales promotion manager in 1949.

IDEAS FOR BETTER INVENTORY CONTROL!

Standard Register Paperwork Simplification



Stock withdrawals are recorded with positive accuracy.

Stock clerks, issuing parts to production, handwrite a tabulating card . . . and identical delivery tickets—as one form.* That's only one idea—Standard's Representatives today offer you specialized information and techniques . . . a basic plan . . . to *break down* your control problem—and simplify the *key record* systems:

- Develop the best procedure.** A Receiving, Stores Issue, Production, Move Order . . . any such record system . . . should *operate* to furnish complete, accurate source data quickly, easily.
- Simplify the writing method.** Modern communications and automatic record production can largely eliminate *clerical time* as a factor in a certain inventory problem—says a PS. writer.*
- Design the most efficient form.** South Carolina Mills' three-part *Case Tag* simplifies warehousing and location of merchandise in stock.*

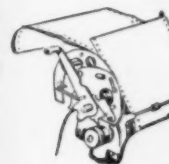
*These and other actual system stories are detailed in PS. magazine—examples of the methods experience our representative makes available. Write for free copies. The Standard Register Company, 404 Campbell St., Dayton 1, Ohio.



KANT-SLIP continuous forms

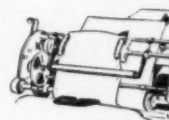


Feeding-aligning devices: THE REGISTRATOR PLATEN

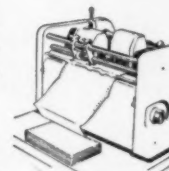


AUTOMATIC LINE FINDER

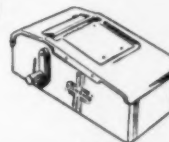
Advances form into new writing position in one motion



DUAL FEED Registers 2 different forms for 1 continuous typing operation



BURSTER-IMPRINTERS Sign, date, number, trim, tear off, stack Kant-Slip forms



FORM-FLOW REGISTERS Better records . . . by hand



UNIT ZIPSET FORMS Carbon interleaved

HANDBOOK EXPLAINS SOCIAL SECURITY BENEFITS

Most American employees are almost totally unfamiliar with the new Social Security benefits, which went into effect January, 1951, according to Commodity Research Bureau, Inc. The Bureau finds that employees generally do not realize that a worker may retire at age 65 and that he and his wife can collect as much as \$120 a month for life. They are even less familiar with the fact that a worker may die at an early age and his family will collect Survivor Benefits up to \$150 a month until the surviving children reach eighteen years of age.

The Bureau has published a comprehensive 32-page handbook on Social Security benefits, designed for distribution by employers to their workers. Entitled "YOUR SOCIAL SECURITY BENEFITS", the handbook clearly explains to the worker exactly how much he and his family are entitled to collect as well as how and where to collect. The publisher has prepared a sliding scale of quantity prices for the handbooks, based on the number of copies ordered by the employer, with the average about 15 cents per copy.

Company officials or personnel executives may send for a free sample copy and detailed quantity price schedule. Write to: Commodity Research Bureau, Inc., 82 Beaver Street, New York 5, N. Y.

1 1 1

INDUSTRIAL PACKAGING SHOW CLEVELAND IN OCTOBER

The Sixth Annual Industrial Packaging and Materials Handling Exposition will be held October 1 through October 4, 1951, at Cleveland Public Auditorium. Produced by the Society of Industrial Packaging and Materials Handling Engineers, the event features an educational program sponsored by a leading University or technical college, and this year's "short course" as it is known, will be sponsored by the Department of Mechanical Engineering of Case Institute of Technology. Another feature of the exposition is the Society's annual protective packaging and materials handling competition. According to Frank W. Green, nationally known packaging authority and chairman of the competition, nearly \$12,000. in prizes and cash awards have been distributed to date.

COMMERCIAL STANDARDS AVAILABLE FROM COMMODITY STANDARDS DIVISION

Copies of the following Commercial Standards are available from the Commodity Standards Division, Office of Industry and Commerce, U. S. Department of Commerce, Washington 25, D. C.

C.S. No. 5-46. Pipe nipples, brass, copper, steel and wrought-iron.

C.S. No. 3-40. Stoddard Solvent.

C.S. No. 6-31. Wrought-iron pipe nipples. Superseded by CS5-46.

C.S. No. 7-29. Standard weight malleable iron or steel screwed unions.

C.S. No. 8-41. Gage blanks.

C.S. No. 10-29. Brass pipe nipples. Superseded by CS5-46.

C.S. No. 12-48. Fuel oils.

C.S. No. 17-47. Diamond core drill fittings.

C.S. No. 19-32. Foundry patterns of wood.

C.S. No. 25-30. Screw Threads, Superseded by CS 24-43.

C.S. No. 43-32 Grading of Sulphonated oils.

C.S. No. 59-44. Textiles—testing and reporting.

C.S. No. 60-48. Hardwood dimension lumber.



PERFECT BALANCE Since The Gay Nineties

Ever since Mr. Weldon Roberts began making erasers, back around 1890, his have been world-known for their Perfect Balance.

TO YOU, this Perfect Balance means time and money saving. Combined with Weldon Roberts quality textures for all types of erasing, it inspires work-confidence, eliminates the delays and temper tantrums caused by "messy" erasing and the re-doing of an entire piece of work.

WELDON ROBERTS RUBBER CO., NEWARK 7, N. J.
America's Foremost Eraser Specialists

ASK YOUR STATIONER FOR TIME & MONEY
SAVING WELDON ROBERTS ERASERS

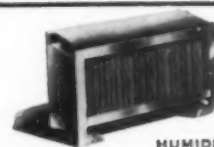
399 TRI-PLY — The original, superior, 3-layer eraser for typists. Two outer plies of red pencil-rubber for smooth, clean erasures on originals and carbon copies, center ply of soft gray ink-eraser for a single letter or a complete line.



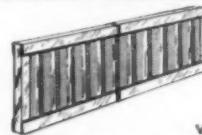
Weldon Roberts Erasers
Correct Mistakes in Any Language

THREE SAFEGUARDS to Protect your Health and Wealth

MODEL
"M"
CHECK
WRITER



HUMIDIFIER



WINDOW
VENTILATORS

NOW AVAILABLE... the SAFEGUARD Dee-R-Tee

The latest and most effective method to keep typewriter type clean, free of ink, as shiny as silver. No soiled fingers. No smudged letters.



Safeguard Corp.

LANSDALE, PENNA.
overseas distributor—Safeguard International
3312 Lancaster Ave., Phila. 4

C.S. No. 90-49. Power cranes and shovels.

C.S. No. 92-41. Cedar, cypress and redwood tank stock lumber.

C.S. No. 95-41. Lead pipe.

C.S. No. 96-41. Lead traps and bends.

C.S. No. 93-50. Portable electric drills (exclusive of high frequency).

C.S. No. 105-49. Mineral wool insulation for low temperatures.

C.S. No. 117-49. Mineral wool insulation for heated industrial equipment.

C.S. No. 126-45. Tank-mounted air compressors.

C.S. No. 129-47. Materials for safety wearing apparel.

C.S. No. 132-46. Hardware cloth.

C.S. No. 133-46. Woven wire netting.

C.S. No. 139-47. Work gloves.

C.S. No. 141-47. Sine bars, blocks, plates and fixtures.

C.S. No. 150-48. Hot rolled rail steel bars (produced from T-section rails).

E. C. A. EMBLEM DECALS

E. C. A. emblem decal transfers that meet E. C. A. requirements for marking equipment shipped abroad, are being marketed by the Meyercord Co., Dept. CN, Chicago 44, Ill. Decals are available with English, French, Korean, Norwegian, German, Icelandic, Swedish, Italian, Turkish, Siamese, Indo-Chinese, Danish or Greek imprinting.



The E. C. A. ruling became necessary when it was discovered that thousands of vehicles and articles of machinery reaching countries under the E. C. A. program did not have proper marking showing U.S.A. origin. Russia capitalized on this by claiming much of the material as gifts of the Kremlin.

The decals are imprinted with "For European Recovery Supplied by the United States of America." Additional decals for use on military equipment are marked "From U.S.A. for Mutual Defense", which is required on Ordnance Department material. The red, white and blue coloring makes the decals unmistakably American.

OFFICE VIGNETTES # 4 OF A SERIES

"Someone smiled
at me
this morning"



MTPL-60 CRESTLINE Secretarial Desk

I'm a vice-president who had a scowling secretary. This morning she gave me a big smile . . . this morning she had her new CRESTLINE Secretarial Desk, and I think the two go together. I don't blame her . . . it's really wonderful office furniture. It puts all this talk about office efficiency right to work. How do I know? I've been smiling myself since last week when I got my CRESTLINE Office.

Crest LINE

SECURITY STEEL EQUIPMENT CORP.

AVENEL, NEW JERSEY





Towle craftsman at work fashioning the original designer's model of a solid silver fork for a new pattern.

TOWLE MANUFACTURING COMPANY SILVERSMITHS
NEWBURYPORT MASSACHUSETTS

CRAFTSMANSHIP *makes fine silver* *... and quality paper*

The craftsmanship heritage of Towle comes from two and one-half centuries of silversmithing that started about 1690 with the Moulton family. It was in 1857 that the first Towle took over the business, in partnership with another Moulton apprentice, W. P. Jones. In 1882 the firm name was changed to Towle Manufacturing Company and it is under this name that the fine old traditions of silver manufacturing are being carried on today.

Such a heritage places upon a company the obligation to keep everything that bears its name in line with its rich tradition...whether it be a piece of sterling silver, or its letterhead.

In its new letterhead design Towle has embodied a modern simplicity that, at the same time, has a distinct feeling of traditional quality. It is this *quality* that is inherent in Strathmore's fine letterhead papers...that makes Strathmore the choice of companies, like Towle, who realize its importance.

When tradition counts...when your company wants its letterhead to carry a silent message of quality...use the look, the feel, the texture of Strathmore expressive letterhead papers to express "quality" for you. Ask your letterhead supplier to show you proofs of your present letterhead, or to submit new designs on Strathmore papers. You'll see for yourself what a difference quality paper can make.

Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Writing, Strathmore Bond. Envelopes to match converted by the Old Colony Envelope Company, Westfield, Mass.

STRATHMORE **MAKERS OF FINE PAPERS**

Strathmore Paper Company, West Springfield, Massachusetts

ELECTROSTATIC AIR FILTER DEVELOPED BY GOODYEAR

Development of a self-charging electrostatic air filter which takes useful advantage of the dielectric properties of polyethylene and other plastic materials, is announced by the Goodyear Tire & Rubber Company, Akron, Ohio. The material used in the filter is a thin film shredded into a porous mass which, as explained by Dr. R. P. Dinsmore, vice president in charge of research and development, when exposed in a current of air picks up an electrostatic charge to thereby attract and retain the finest of dust, soot or smoke particles suspended in the air. The filter collects foreign matter throughout its entire mass. Even particles which are so fine that they remain suspended in the air for days, and in water for months before settling, are removed by the new filter, it is said.



The filter can be cleaned and fully regenerated by immersion in water containing a detergent, and replaced immediately without any deteriorating effect. Many uses are seen for the new filter, such as in offices and interiors where dust settlement is a problem, in industrial paint spraying and chemical departments where foreign organic materials can do considerable damage, and in forced draft hot air furnaces and air conditioning systems.

FILM ON PRINCIPLES OF AUTOMATIC CONTROL

Making use of the "pictorialized lectures" technique, the Instrument Society of America, 921 Ridge Ave., Pittsburgh 12, Pa., has just completed a fifty-five minute recording of "Principles of Automatic Control", in full color and sound, 16 mm. Copies of the film may be purchased by companies for their own training programs.

Conference To Cover New Industrial Accounting Techniques

New applications of industrial accounting techniques to fit the changing requirements of industry dictated by the demands of an enlarged defense economy, will be featured at regional cost conferences to be conducted by the National Association of Cost Accountants in Grand Rapids, March 30-31 and in Houston, April 6-7. The spring conference program will be climaxed by the association's thirty-second annual international cost conference to be held in Chicago, at the Palmer House, from June 24 to 27.

Topics for discussion at the Grand Rapids Regional Cost Conference include "The Need for Agreement on a Uniform Basis of Inventory Valuation," by Herbert T. McAnly, partner of Ernst & Ernst, Cleveland; "The Nature and Extent of Supplementary Labor Costs," by Sam A. Marsh, professor of accounting at Washington University, St. Louis; "Costs and Government Contracts," by Arthur S. Hudson, defense contracts administrator, Chrysler Motor Co., Detroit; and "Costs and

Controlled Prices," by Herbert F. Taggart, assistant dean of the School of Business Administration of the University of Michigan, Ann Arbor. There will also be a panel discussion on accounting for supplementary labor costs.

The Houston Regional Cost Conference will keynote its program to the theme, "Tailoring Cost Accounting Procedures to Fit Industry's Needs." Among the subjects to be covered are "Standard Costs for a Petroleum Refinery," by Jesse G. Kline, chief accountant of The Atlantic Refining Co., Philadelphia; "Processing Costs in a Chemical Operation," by D. S. Sheehan, vice president and controller of Monsanto Chemical Co., St. Louis; "Simplified Manufacturing Job Costs for the Oil Tool Industry," by H. J. Hagn, vice president and general manager of Well Equipment Manufacturing Co., Houston; and "Adapting Cost Methods to the Needs of Accounting," by Paul C. Taylor, professor of accounting at Tulane University, New Orleans.

GRAY IRON SOCIETY PUBLISHES COATING MANUAL

"Metallic and Non-Metallic Coatings for Gray Iron", a timely new technical manual covering in detail the practice of surface coating gray iron castings, has been released by the Gray Iron Founders' Society, 210 National City, E. 6th Bldg., Cleveland, Ohio.

The Society's Technical Director, Charles O. Burgess, author of the manual, in announcing its release stated that "the use of the manual will facilitate product economies and conservation of vital alloys, which are now in short supply and under rigid Government control."

The 76-page manual describes for the first time practical methods of applying all known types of coatings to gray iron. The booklet is particularly valuable to engineers and designers.

BULLETINS GIVE DATA ON PRINTING CALCULATORS

"Facts About Office Figures" and "New Tempo In Figure Production With The Printing Calculator" are the titles of two new bulletins re-

cently issued by Remington Rand Inc. Both describe Remington Rand printing calculators that multiply directly, divide automatically, add and subtract, and print the proof on the tape.

Portable, compact, rugged and streamlined in appearance, the calculators are completely electric in operation, with 10-key operating ease, for fast operation. Built-in cushions and sound-proofing of the operating mechanism reduce office noise to a minimum.

Of special interest are the uses describing the many applications for which Remington Rand Printing Calculators are used by commerce and industry. These include computing interest, payrolls, short rate cancellations, chain discount, inventory, extending orders, mark-up, percentage of increase or decrease, in addition to other most-often-used computing functions.

Copies of both bulletins, AD 536 and AD 515, will be sent on request by writing Remington Rand Inc., 315 Fourth Avenue, New York 10.

**SEE CLASSIFIED SECTION
PAGE 338**

"definitely easier writing!"



"...I am grateful for the effortless way Mongol Pencils write"... says Clerk Ruth Keefe, of Euclid, Ohio.



"It's less work for me when an office uses Mongols—they don't need sharpening as often"... that's the experience of Jimmy Powers, Office Boy, Lubbock, Texas.



"Using a pencil all day is less tiring with Mongols—they're so smooth writing"... so says W. A. Carr, Ticket Agent in San Anselmo, Calif.

The test of actual use has earned MONCOL Pencils a place on millions of office desks. For smoothness, strength and longer wear, always specify Mongols!

...it's the
LIGHT TOUCH LEAD
that does it!

MONCOL

by **EBERHARD FABER**

TRADE MARKS REG. U. S. PAT. OFF.

Let **TEXCEL** take over!

...ALL OVER THE OFFICE!

TO FILE
IN STYLE!



Keep **TEXCEL** Cellophane Tape on hand for repairing torn file pages, for sealing closed files, for tabbing file titles clean and neat.

TO PATCH
A PAGE!



TEXCEL Cellophane Tape speeds up a dozen desk jobs. Sealing, hinging, holding, repairing and fastening tasks are made easier with **TEXCEL**. Keep it handy.

TO STOP A
POP



Nothing steps up office wrapping and mailing chores as fast as **TEXCEL** Cellophane Tape. For bigger jobs use long lengths and dispenser.

TO POST
A
POSTER!



TEXCEL takes over countless bottle-neck, time-consuming chores. Stock **TEXCEL** Cellophane Tape today!

TEXCEL CELLOPHANE TAPE



INDUSTRIAL TAPE CORPORATION
NEW BRUNSWICK, NEW JERSEY
Also makers of a complete line of pressure-sensitive
tapes for industry.



HOW TO TAKE THE "STRETCH" OUT OF AN INCH

Inches stretch when weather gets hot — but not in this shop for building and repairing high-precision tools and gauges. Because this shop guards its tolerances — as fine as 1/30,000 of an inch — with Frigidaire Air Conditioning.

Thanks to Frigidaire, temperature is constant all year 'round. Equally important, the air is clear of harmful dust and rust-producing moisture. And working in a cool, comfortable climate, workers produce more — with greater accuracy.

Whatever your own plant's air conditioning needs, you can meet them quickly and inexpensively with Frigidaire equipment. Small workrooms and offices can be air conditioned with Frigidaire Room Conditioners. For larger areas, Frigidaire Self-Contained Air Conditioners can be quickly installed with no interruption of business. They require little or no duct work and no major alterations. Frigidaire Central Systems are also available for a wide range of applications.

For details, call your nearby Frigidaire Dealer, Distributor or Factory Branch — and ask, too, for Frigidaire's free Refrigeration Security Analysis. Look in the Yellow Pages of your phone book. Or write to the Frigidaire Division of General Motors, Dayton 1, Ohio. In Canada, Leaside 12, Ont.



FRIGIDAIRE

America's No. 1 Line of Refrigeration and Air Conditioning Products
for Offices • Laboratories • Processing • Precision Assembly • Storage
Plant Lunchrooms • Medical Departments • Water and Liquid Cooling

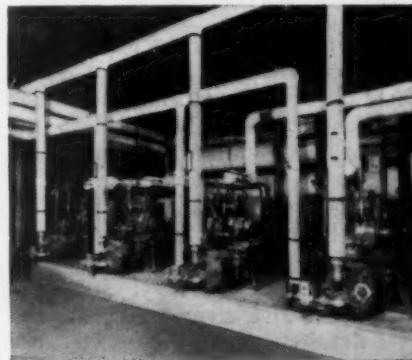
*Frigidaire reserves the right to change specifications, or discontinue models, without notice.



Grinding wheel plant uses Frigidaire Air Conditioning in the section where abrasives are mixed with a bonding agent. This keeps the bonding agent from getting too warm. Maintaining just-right temperature insures uniform hardening and high-quality product.



In making bearings, the rooms where powdered metal is coated on metal strips are air conditioned by Frigidaire central system equipment. This equipment prevents humidity from caking the metal powder — insures uniform coating of powdered metal at all times.



Large office building is air conditioned by Frigidaire Central System. Unique installation employs 8 compressors instead of one large one. This means operating savings, since compressors only run as needed. And it eliminates the danger of total shutdown for servicing.

AMONG THE Associations



Public Utilities Group Meets in Pittsburgh Twentieth Annual Midwinter Conference at William Penn Hotel Draws Record-breaking Attendance.

WITH a registration of approximately 475 purchasing agents and guests, plus 75 lady visitors, the Twentieth Annual Midwinter Conference of the Public Utility Buyers Group of the National Association of Purchasing Agents, held its largest and one of

versity of Pittsburgh, concluding with a cocktail hour and dinner at the Pittsburgh Field Club.

Sponsoring Manufacturers

The manufacturers sponsoring this unique welcome were: Allis-Chalmers Manufacturing Co., Alu-



Officers of the Buyers' Group: J. Donald Hogg, vice chairman; Fred D. Bradley, secretary-treasurer; Robert V. Stephens, chairman; J. R. Carmichael, vice chairman; Arthur Ziegler, vice chairman.

its most successful meetings at the William Penn Hotel, Pittsburgh, Pa., January 17, 18 and 19.

Sunday, January 17th, was a gathering of the clan day, the Conference sessions occupying the whole of January 18th and 19th. On Sunday, the members of the Utilities Group and their ladies and friends, were guests of a group of 22 Pittsburgh manufacturers, commencing with noonday brunch at the William Penn, a tour of sections of the city of Pittsburgh by bus during which varying points of interest and civic and commercial developments underway and proposed, were called to the attention of the visitors. This trip, in which some 400 persons participated, included a trip from the top of the Mount Washington section of Pittsburgh on an incline railway, a guided tour through the main floor classrooms of the beautiful Gothic Cathedral of Learning, Uni-

minum Company of America, American Steel & Wire Co., Babcock & Wilcox Co., Blaw-Knox Co., Copperweld Steel Co., Dravo Corp., Elliott Co., Fort Pitt Bridge Works, General Electric Co., Gulf Oil Corp., Hubbard & Co., Koppers Co. Inc., Mine Safety Appliances Co., National Electric Products Corp., Oliver Iron & Steel Corp., Pennsylvania Transformer Co., Pittsburgh Piping & Equipment Co., Railway & Industrial Engineering Co., Rockwell Manufacturing Co., Seyler Manufacturing Co., and the Westinghouse Electric Corporation. The local committee in charge of this entertainment consisted of F. F. Fullerton, J. E. Coleman, L. B. Hartman, D. E. Winslow, and R. C. Wenz.

Monday evening, January 19th, was given over to the Group's annual social hour and banquet in the main ballroom of the William Penn, 450 persons being in attend-

ance. In addition to a variety of entertainment numbers, the evening was featured by several presentations by the Westinghouse Choral Club.

Announcement was made that the 1952 Utilities Group mid-winter meeting is scheduled to be held in Cleveland, and that the 1953 meeting is scheduled to be held in New Orleans.

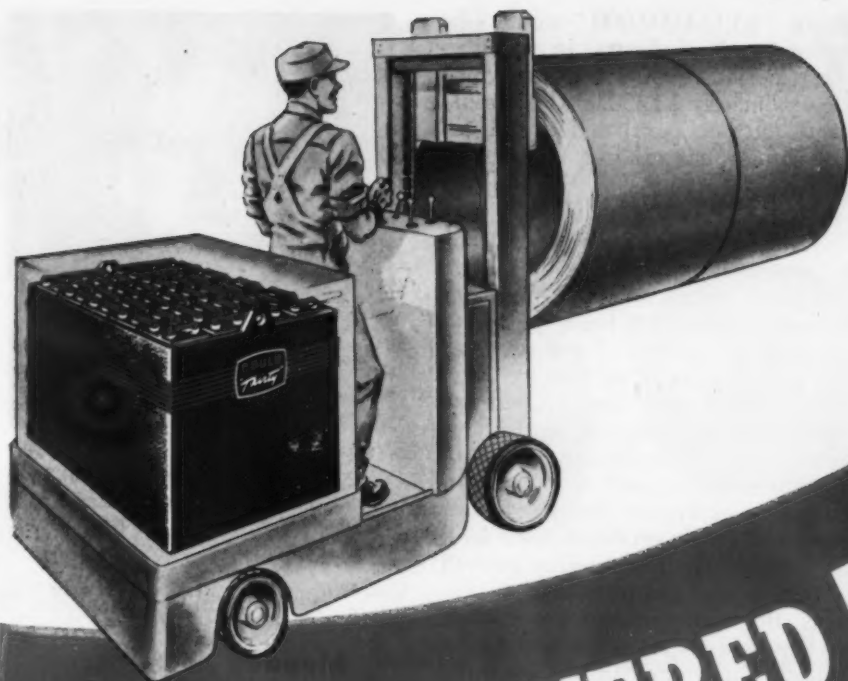
Monday Morning Session

H. Nedwill Ramsey, vice president in charge of purchasing, Philadelphia Electric Co., Philadelphia, Pa., was session chairman Monday morning, the 18th. Following a formal welcome by R. V. Stephens, chairman of the Public Utility Buyers Group, purchasing agent, Public Service Company of Oklahoma, Tulsa, Okla., and R. C. Wenz, president of the Purchasing Agents Association of Cleveland, General Purchasing Agent, Duquesne Light Co., Pittsburgh, there was a brief talk by P. H. McCance, president of the Duquesne Light Co., Pittsburgh, his subject being, "On the Threshold".

"Observations on the Workings of Socialism in Great Britain and Western Europe" was the subject of the next speaker, Col. W. F. Rockwell, chairman of the board of



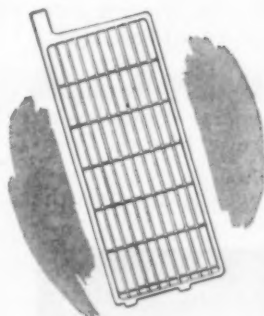
"Natural gas reserves appear ample for many years to come." D. A. Hulcy, president, Lone Star Gas Company, Dallas.



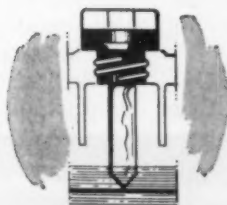
GOULD-POWERED TRUCKS!

**Keep
Production
Rolling!**

Here's why. Battery trucks are always ready to work . . . position loads faster . . . cut accidents . . . are quiet and odorless . . . are safe with foods and inflammables . . . hug the floor on turns and high lifts . . . reduce operator fatigue.



Gould's "Z" Grid is completely solid all the way through. Porosity reduced 85%! 66% more resistant.



Gould batteries with Telelevel Vents save time and trouble—show electrolyte level without removal of Vent Caps.

Regenerative active material that renews itself continuously is held in place to do useful work by exclusive glass tape insulation.



**Power your trucks with
GOULD "THIRTY" BATTERIES**
America's Finest Industrial Truck Batteries

GOULD

STORAGE BATTERIES

GOULD-NATIONAL BATTERIES, INC.*
TRENTON 7, NEW JERSEY

Always Use Gould-National Automobile and Truck Batteries
**Formerly Gould Storage Battery Corporation*

(Continued from page 210)

the Rockwell Manufacturing Company, Pittsburgh. An abstract of Mr. Rockwell's talk is published on another page.

D. A. Hulcy, president of the Lone Star Gas Company, Dallas, Tex., who is president of the American Gas Association, and Vice president of the United States Chamber of Commerce, was the next speaker, his subject being, "The Gas Industry Marches on."

Mr. Hulcy stated that at the end of 1950 the gas industry had grown to be an 834 billion dollar industry,



Roy W. Emerson, presented paper on metallurgy and h. p. piping

whose transmission and distribution system now measures more than 375,000 miles. The industry has allocated, in its long-range program, nearly a billion dollars for construction and expansion in 1951. At the end of 1950 the industry was serving 24,362,000 customers, and revenues for the year reached the all-time high of \$1,958,000,000. Last year \$954,000,000 was spent on construction and expansion of natural gas lines.

A survey by the American Gas Association, he said, revealed that

about \$3,154,000,000 would be spent by the industry in the five-year period 1950-1954, of which approximately \$2,750,000,000 would be devoted to construction and expansion of natural gas facilities.

Natural Gas Supply

"Natural gas reserves continue to appear ample to serve the nation for many years to come", he continued, "even with the rapidly increasing production of natural gas." Proved reserves of natural gas total 180.3 trillion cubic feet, an increase of 6.5 trillion feet over proved reserves at the beginning of 1949. New discoveries and extensions of estimates of known fields continue to exceed yearly production, he said.

"Despite the tremendous growth of our natural gas transmission systems, the manufactured gas branch of the industry continues to be of utmost importance in the nation's economic picture", he stated. "Demand for gas service continues to exceed the ability of the industry to serve this demand in many areas. This is particularly true as regards house heating and its peak-load problems.

Concluding his talk, he said, "It is recognized that the defense program will have an important bearing on all plans not only of our industry but industry as a whole. It happens that the gas business can be carried forward only by the use of steel pipe, and steel is one thing that will be consumed in ever growing quantities while preparing our country for defense. Our nation has been declared to be in a state of emergency and all business operations will be secondary to the program which has for its purpose the preservation of our country. The out-



Vice President Tomlinson Fort of Westinghouse stated that the utility industry is well prepared to handle all demands for defense production.

look for the immediate future is indefinite."

Monday Afternoon

The Monday afternoon session, for which Chester F. Ogden of the Detroit Edison Company was chairman, was featured by the following talks, abstracts of which appear in this issue of Purchasing:

"Purchasing Looks at Management"—H. F. Jones, president, N.A.P.A., purchasing agent, E. I. du Pont de Nemours & Co.

"Steel" (Outlook, Production, Demand, Price)—E. L. Shaner, editor-in-chief, Steel, Cleveland.

"Copper" (Outlook, Production, Demand, Price)—Dr. Joseph Zimmerman, editor-in-chief, Daily Metal Reporter, New York.

"Inventory Control"—Bruce D. Henderson, general purchasing agent, Westinghouse Electric Corporation, Pittsburgh.

The concluding speaker for the (Please turn to page 214)



"The things being accomplished by chemistry today put Aladdin and his lamp to shame." S. J. Rosch. Right—Ben Newberry and Charlie Wilson of Dallas find Mr. Rosch's talk entertaining.




B.F. Goodrich



**Only a specialist can pick
the one right tire for your job!**

IT TAKES a lot of know-how . . . of specialized training . . . to be able to decide which type, size and tread of an industrial tire is especially suitable for a specific job. In fitting the right tire to the job and in giving

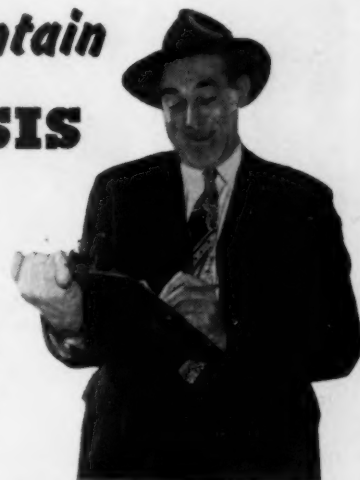
the right care and maintenance, you can increase industrial tire life as much as 100%. The B.F. Goodrich Tire and Wheel Analysis Plan service helps do this for you . . . and it's yours with no obligation.

**Let this man help you maintain
your equipment with  ANALYSIS**

Your local B.F. Goodrich man is a tire specialist. He's been given training so that he can analyze your industrial tire operation.

Let him study your loads, hauls, equipment, floors and hauling surfaces. Then he'll be able to recommend the correct type and size for your particular operation.

He'll also give you expert advice on industrial tire care and maintenance. His advice is impartial and unbiased . . . for only B.F. Goodrich has a complete line of tires: a special type for every job (solids, semi-pneumatics and pneumatics), and a full range of sizes. *A similar program is available for manufacturers of industrial hauling equipment.*



Use the coupon for full details at no obligation.



The B. F. Goodrich Co.
Department TW-104
Akron, Ohio

Please give me additional information on your Tire and Wheel Analysis plan.

Name _____

Title _____

Company _____

City _____ State _____

(Continued from page 212)

afternoon was Roy W. Emerson, metallurgist, Pittsburgh Piping & Equipment Company, Pittsburgh, Pa., who presented a technical paper on "Metallurgy as It Relates to High Pressure Piping."

Tuesday Conferences

Fred D. Bradley, purchasing agent, Southern Union Gas Company, Dallas, was session chairman Tuesday morning, February 19.

First of the speakers was Tomlinson Fort, vice president, Westinghouse Electric Corporation, whose subject was "Growth and Future of the Electric Power Industry."

In his opening remarks he said, "Those of us who have been following the Washington Picture closely have felt encouraged in recent weeks. Out of the confusion which exists in Washington, there is slowly emerging a long range program for this country in the present world crisis. This policy calls for building up a powerful military force over the next two years. After these two years we will continue to spend 13% of our gross national product



One of the new materials demonstrated was plastic foam, a material which expanded into a mass hundreds of times the volume of the base material.

each year to support this force. We spent about 5% this past year, and about 41% at the peak of World War II.

"Economists, however, both in and outside the government worry most about the readjustments of the next two years. After that, they believe, our economy can stand indefinitely the strain of supporting a military burden that consumes 13% of the national product."

Mr. Fort declared that electric power is the all-important requirement for maintaining and expanding our industrial plant to meet the

overall program. In 1950, he said, the utilities bought fourteen million kilowatts of generating capacity. They had another fourteen million kilowatts of capacity on order at the beginning of 1950. Nearly all of this 28 million kilowatts will be installed by the end of 1953, thus bringing installed capacity of 93 million kilowatts. This is a 35% increase in the next three years. It is eight million more kilowatts than called for in the President's economic message in January.

As a result of this construction program, he continued, it is forecast that on a total national basis, your margin of reserve capacity will be 15% this year, and that it will increase steadily to 20% in 1953. It appears at this time that the utility industry is and will be well prepared to handle all demands for national defense production.

Commenting on the ability of the manufacturers of electrical goods to produce, he said that since VJ day, Westinghouse, General Electric and Allis-Chalmers have spent about three-quarters of a billion dollars in enlarging and improving their facilities.

"Is this enough to meet both military and civilian demand? he queried. "We thought so a few



"Atomic energy will not be a source of bulk generation of power in the foreseeable future". A. A. Johnson, Central Station Engineering, Westinghouse Corp.

months ago, but a lot has happened in those months. Larger military orders have already insured sharp cutbacks in consumer goods. At the end of 1950, more than 30% of unfilled orders at Westinghouse were for direct defense needs.

Reviewing the long-range potential of the industry, he pointed out that the United States will have a population of 174 million in 1965, making for 56 million homes. The



"We are the lousiest of salesmen when it comes to selling the American Way". K. W. Haagenson, Allis-Chalmers Manufacturing Co.

use of power in the home is increasing at a rate better than 100 kw hours per year. The farm market that will come with complete electrification has been "scarcely tapped".

Concluding his talk, Mr. Fort said, "We estimate that industrial production in the U. S. will increase about 50% in the next 15 years. Last year, for each unit of production of the Federal Reserve Board index, 715 million kw hours were used. If present trends continue, this figure will reach 973 million kw hours in 1965. We believe that the growth of the electrical power industry will go on at an average rate of something like 6% per year. We, the electrical manufacturing industries will expand along with you.

"The other day I read a prediction about this country of ours that impressed me deeply, I'll quote it: "I do believe that we shall continue to grow, to multiply and prosper, until we exhibit an association, powerful, wise and happy, beyond what has yet been seen by man." Thomas Jefferson said that 150 years ago, and I see no reason today to change or to doubt it."

Engineering Trends

A. A. Johnson, manager, Central Station Engineering, Westinghouse, in a paper on "Future Engineering Trends in the Electric Power Industry" stated that the trend for building generators of higher ratings will continue as long as materials and design techniques advance; that larger units cost less per kw of installed capacity, and the larger size units take less material and manpower per kw.

The relation of size to weight in turbine generator design has

(Please turn to page 218)

**FEDERAL NOARK
MEANS
BUSINESS!**



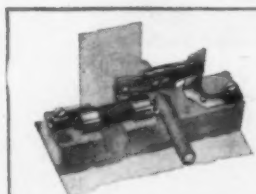
Safest... coolest!

THIS RADICALLY NEW Federal Noark Front-Operated Safety Switch is the coolest-operating switch available. It features guaranteed current break... visible blade construction... a special 3-position, front-operated handle... arc mufflers or Rolarc snuffers. Accommodation for four padlocks makes the switch practically tamper-proof.

Type "A" Federal Noark Front-Operated Safety

Switches come in 30, 60, and 100 ampere capacities for 230-volt A.C.—250-volt D.C., and for 575-volt A.C.—600-volt D.C. The Type "C" Front-Operated Safety Switches are made in the same sizes and ratings with many of the same advantages.

Order these superlative switches from your Federal Noark distributor. And write us today for free booklet. Federal Electric Products Company, Newark 5, N. J.



COOLEST... The new Noark Safety Switch has only two joints to each pole, both under high tension.



COOLEST... Pressure spring of patented fuse holder located in block under fuse where unaffected by heat.



SAFEST... This is the only visible blade switch with the operating cross bar beneath the switch blades.



SAFEST... New Front-Operated Switches of more than 250 volts are protected by Noark Rolarc Snuffers.



TIME-SAVING... Ample wiring space and removable interior make wiring extremely easy.

FEDERAL NOARK

Complete line of Federal Electric Products includes Motor Controls, Safety Switches, Service Equipment, Circuit Breakers, Panelboards, Switchboards, Control Centers, Bus Duct ★ Sales offices in principal cities.



Alabama Association's Buyer-Seller Dinner Big Success



A general view of the speakers' table at the annual Buyer-Seller dinner of the Alabama Association

The fourth annual Buyer-Seller Dinner sponsored by the Purchasing Agents Association of Alabama recently drew more than 550 guests to the Thomas Jefferson Hotel, Birmingham.

Good fellowship was the keynote throughout the evening. A highly enjoyable social hour was held prior to the banquet. Following a filet mignon dinner, J. R. Noel, assistant purchasing agent of the Tennessee, Coal, Iron & Railroad Company, and first vice-president of the association, spoke briefly to the group. Stressing the cooperation between buyer and seller, he said, "a good many of our salesman friends came to our rescue when materials were hard to find in the last war, and I don't doubt salesman friends will rescue us again."

George L. Wilson, Purchasing Agent of the Jefferson County Commission, was general chairman of the affair. He introduced the traditional floor show with Stanleigh Malotte as master of ceremonies. Among the performers was Phil Lavalette, purchasing agent of the Stockham Pipe Fittings Company, who was billed as "The P.A. With the \$1,000,000 Voice".

The film "Partners in Purchasing", sponsored by the National Association of Purchasing Agents, was shown as a constructive demonstration of profitable buyer-seller relationships.

Chairmen of the committees for the annual meeting were: George L. Wilson, general chairman; Granville N. Wood, program; D. C. Clark, entertainment; Ernest H. Crain, decorations; Carl F. Thomas, finance; Quin Cather, printing; J. B. Noel, banquet; A. M. Trogner, Jr., reception.



Snapped at the speakers' table: (left to right) W. P. Engel, president of the Birmingham Chamber of Commerce; J. B. Noel, first vice-president of the Alabama Association; Lane Carter, feature writer of the Birmingham News; George L. Wilson, general chairman of the dinner; Robert W. Kinney, industrial editor of the Birmingham News.

ST. LOUIS ASSOCIATION HEARS TALK ON SOUTHWEST

A regular meeting of the Purchasing Agents Association of St. Louis was held at the Hotel Sheraton on February 27. Guest speaker was Richard H. Thach, southwestern district central station manager, Westinghouse Electric Corporation.

Mr. Thach's subject was "The South-

west—Land of Rich Reward," and he used colored slides to illustrate the talk. Mr. Thach pointed out the great opportunities the region offers to both old and new industries.

Fred J. Risberg, chairman of the commodity committee, led the commodity discussion.

It was announced that the association has reached an all-time membership high of 303.

ACCURACY

not for its own sake but because it

Reduces your Piping Costs

Exceptional dimensional accuracy and uniformity of Midwest Welding Fittings speeds piping work and reduces cost. All pipe can be cut in advance according to drawings, with assurance of accurate fit. Welders do not have to spend costly time struggling to line up fittings and pipe. Welding proceeds rapidly, economically with no time-wasting compensation for inaccuracies.

All critical dimensions of Midwest Fittings are accurate and uniform. For example, Midwest Welding Elbows are first made slightly oversize. They are then reheated to forging temperature and brought to final size in compression dies. In addition to relieving stresses from forming and welding, this assures true circular cross-section, controlled wall thickness and accurate radius, included arc and tangents. Midwest Elbows and Tees have accurate welding bevels, included angles, etc., because all ends are machined simultaneously in special machines.

There is a Midwest Distributor near you. Get in touch with him for your fitting needs. Also ask for Catalog 48.

4098

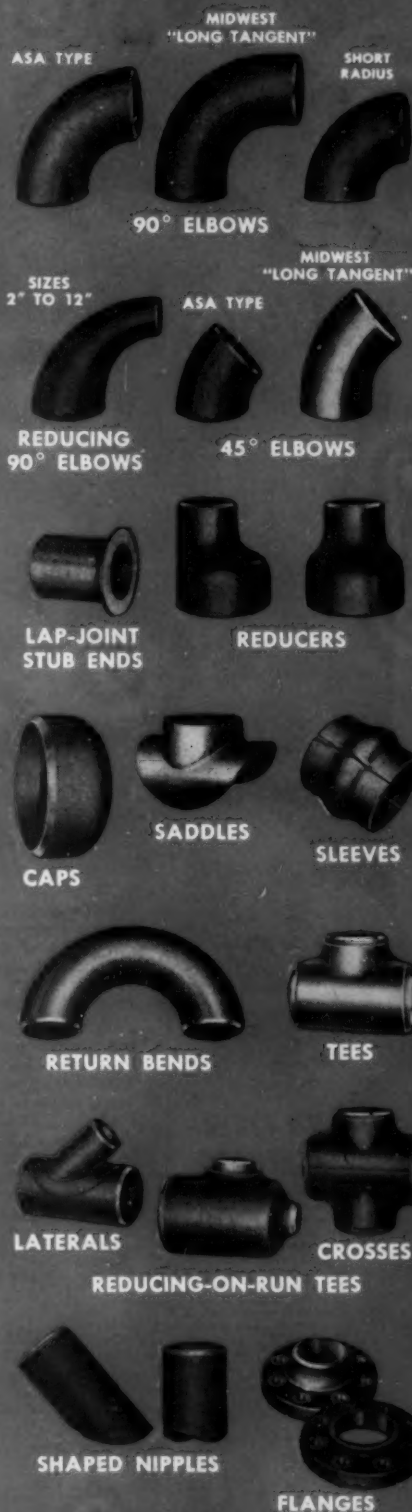
MIDWEST

PIPING & SUPPLY COMPANY, Inc.

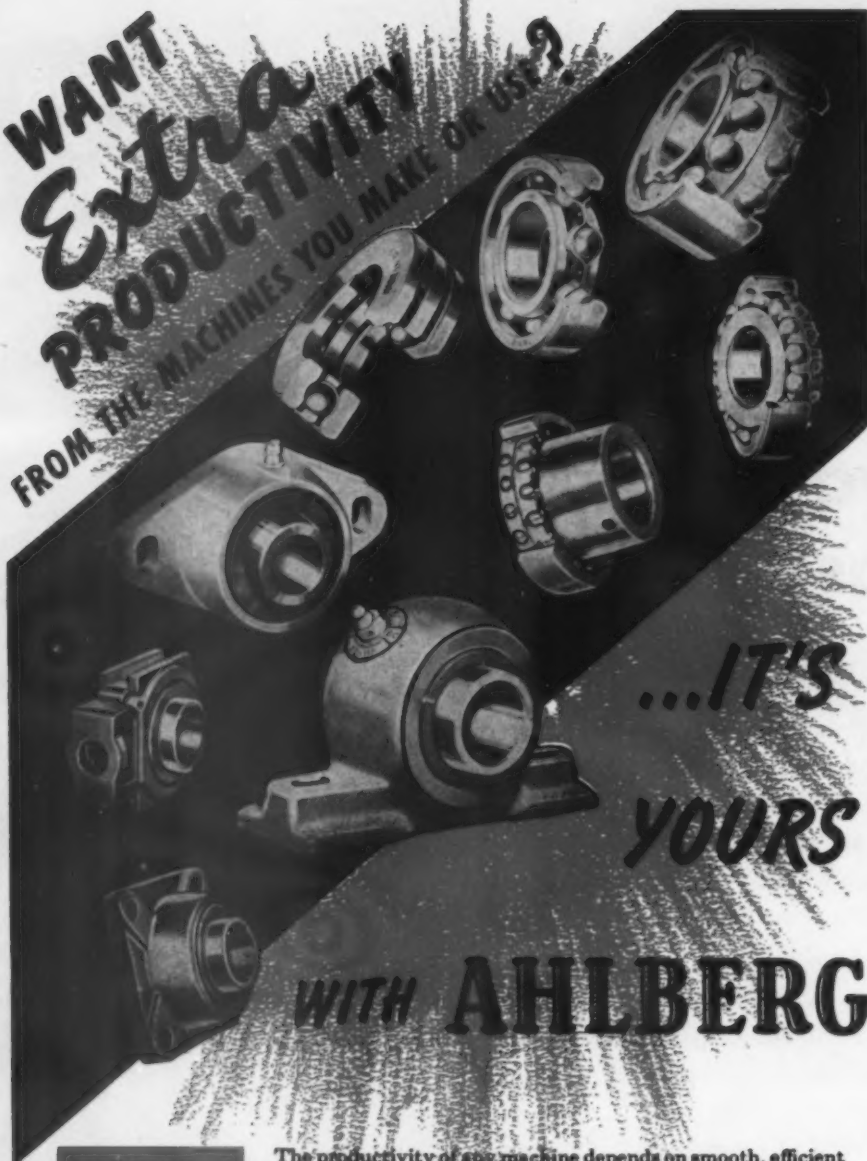
MAIN OFFICES: 1450 SO. SECOND STREET, ST. LOUIS 4, MO.

Sales Offices: New York 7-30 Church St. • Chicago 3-79 W. Monroe St.
 Los Angeles 33-520 Anderson St. • Houston 2-1213 Capitol Ave.
 Tulsa 3-224 Wright Bldg. • Boston 27-426 First St.
 Plants: St. Louis, Passaic, Los Angeles and Boston.

MIDWEST WELDING FITTINGS
 Improve Piping Designs
 and Reduce Costs

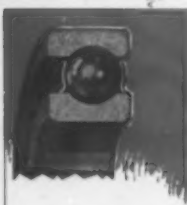


**WANT
Extra
PRODUCTIVITY
FROM THE MACHINES YOU MAKE OR USE?**



**...IT'S
YOURS**

WITH AHLBERG



**NO FINER
FEATURES**

Ultra-precise tolerances...
races of chrome alloy elec-
tric furnace steel with
uniformly fine-grained
homogeneous structure...
rugged, exactly bal-
anced, deep grooved ball
paths "generated" for true
race curvature and pol-
ished to super smoothness
... micro-lapped chrome
steel balls matched in sets
and sphericity to within
.000025".

The productivity of any machine depends on smooth, efficient power transmission. And this kind of power can be assured only if top quality bearings are an integral part of the machine design. This extra productivity from fine bearings is yours with AHLBERGS... the bearings precision built to deliver super service.

Whether you're a purchasing agent, design engineer or maintenance man you've long since discarded the idea that you can always count on look-alike bearings to serve-alike. That's why we unhesitatingly invite you to make your own comparisons, make your own tests! We're confident you'll find that Ahlberg Bearings are designed and built to bring you plus performance advantages while saving you money in the long run on every machine you make or use. You'll find the Ahlberg organization an understanding, complete and capable bearing source—a source thoroughly qualified, by more than four decades of experience in precision craftsmanship, to satisfy your most exacting specifications.

AHLBERG BEARING COMPANY

Precision Craftsmen Since 1908

3025 West 47th Street, Chicago 32, Illinois

DISTRIBUTORS IN ALL PRINCIPAL INDUSTRIAL AREAS

AHLBERG

**BALL BEARINGS • ROLLER BEARINGS • THRUST
BEARINGS • BALL BEARING HOUSINGS**

PUBLIC UTILITIES CONFERENCE

(Continued from page 214)

been undergoing a marked change. In the larger sizes, the weight of 3600-rpm machines is now only about 60% of that for 1800-rpm machines.

Speaking of the trend in prime movers, he said that in the past the steam turbine with low alloy steel allowed a steam temperature of only 950 deg. F. Metals have been improved, and steam temperatures have reached 1100 deg. F. This gives about 7% increase in efficiency over the 950 deg. temperature. The next step up to 1150 deg., will follow as soon as metallurgists give us the materials to work with.

The gas turbine is a relatively new type of prime mover which today stands about where the steam turbine stood 50 years ago. Its most efficient operation, and in fact, its future development depends on the development of metals suitable for temperature of 1500 deg. and higher. In the near future we will see capacities up to 10,000 kw in the open cycle form. The industry is ready to build gas turbines up to about 15,000 kw with about the same efficiencies as the corresponding size of steam turbine.

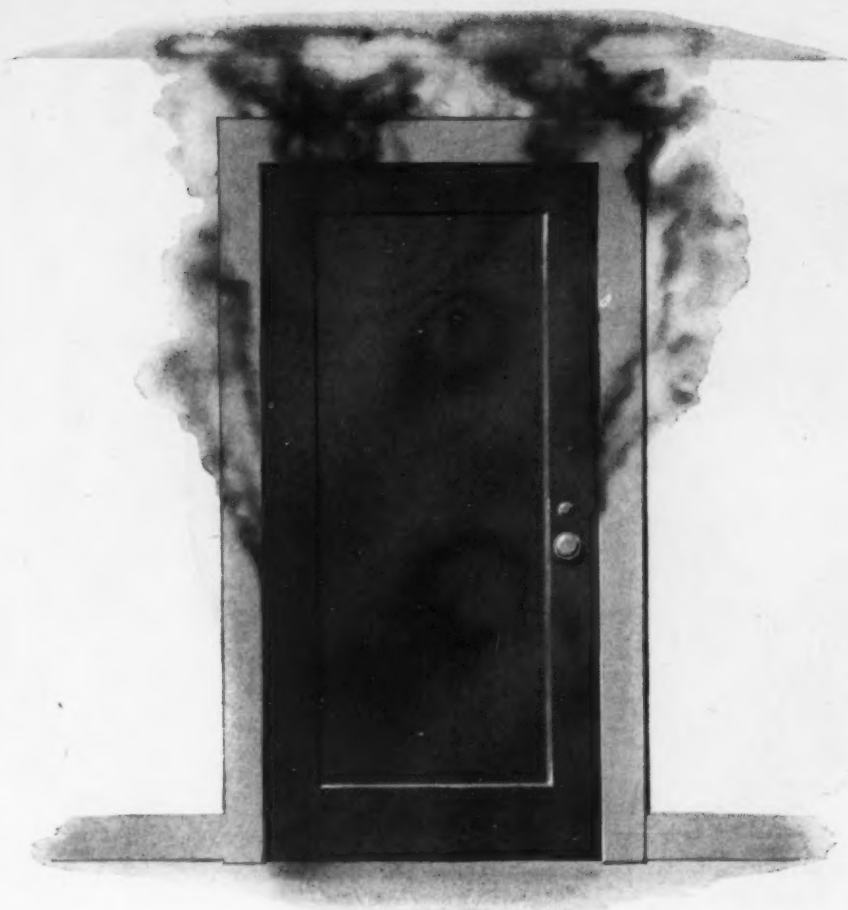
Atomic energy will not be a source of bulk generation of power in the foreseeable future. Mr. Johnson also expressed the opinion that the mercury turbine will not make serious inroads in the power generation field.

Commenting on transmission, he said that the present maximum commercial operating voltage in the U. S. is 287 kv, that the American Gas and Electric Co. has definite plans to build a transmission system using 315 kv. Others are studying higher voltages, he continued, but it seems doubtful if we will have operating voltages in excess of 400 kv for some time to come because distances that power is transmitted in this country are relatively short. Series capacitors will be a factor in high voltage transmission lines.

Standardization

There is a stronger trend than ever in this country toward standardization of methods and all kinds of equipment, he stated. The electrical industry has from the very first been among the leaders in the standardization movement in America, but it is obvious that there is

(Please turn to page 224)



Where is the safest place to keep your documents?

Are your contracts, blueprints, accounts receivable—the records that keep your business going—really safe?

If you've ever seen business papers charred by fire . . . or made illegible by water from fire fighting, you'll want to make sure it can't happen to your records.

Wherever you store these papers, you can rely on a *Kidde* Fire Extinguishing System to protect them. A Kidde System uses carbon dioxide—a gas that won't mark, stain or discolor papers—and it puts out fire *fast*.

You can put a Kidde system on guard over one or many record vaults . . . ready at the first sign of flame to release a fire-smothering cloud of CO₂ . . . and do it *automatically*.

Why not go *all the way* in protecting your papers. Call a Kidde expert for full information.

Kidde

**Walter Kidde & Company, Inc., 447 Main Street, Belleville 9, N. J.
In Canada: Walter Kidde & Company of Canada, Ltd., Montreal, P. Q.**



AIRCO
ACCURACY...
PRECISION ... OPERATING ECONOMY
designed into the all new

AIRCO NO.50
TRAVOGRAPH

GAS CUTTING MACHINE

Airco's NEW No. 50 Travograph is a rugged, all-welded gas cutting machine. Its massive, long-lived design is engineered to give fingertip sensitivity to all production operations. Used as a basic tool for multi-torch shape cutting, squaring or beveling, its outstanding accuracy slashes reject loss and working costs to a minimum.

Today's most modern production tool, the rugged new Airco No. 50 Travograph precision-cuts steel—light plates, heavy slabs, billets, forgings—to close tolerances. Here are the reasons for its remarkable exactness . . . the "why" it guarantees faithful reproduction.

1. All-welded construction provides a combination of ruggedness, resistance to vibration, and precision operation.
2. Rigidity built into the torch-bearing pantograph arms enables the torch bar to support a uniform load of 500 lbs!
3. Perfectly-balanced when properly set on 16' rails.
4. Ball bearings in the hinge joints make it extremely smooth operating.

For greatest operating flexibility, the new No. 50 Travograph can be equipped with three distinctly different tracing devices—manual, magnetic, or the full-automatic "Electronic Bloodhound". The "Electronic Bloodhound" needs only an outline drawing or silhouette to cut the most intricate shapes smoothly, sharply, quickly . . . and with extreme accuracy.

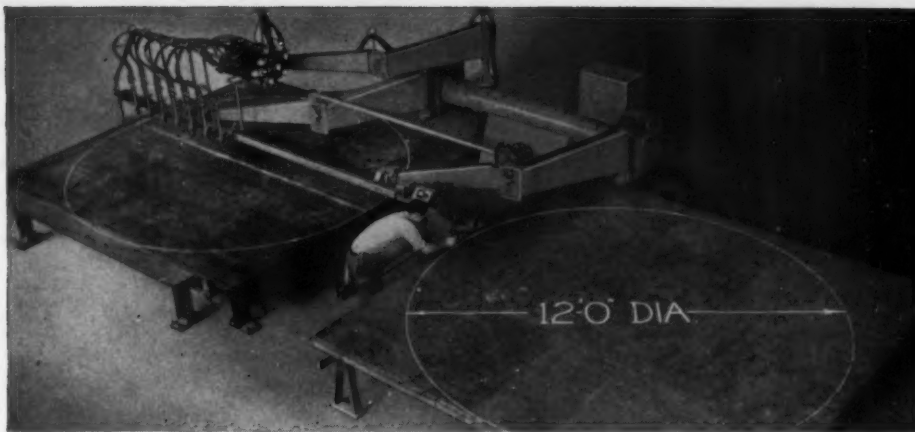
If your production line requires quantity flame shaping operations . . . and if close precision cutting would lower your finish-machining costs . . . it will pay you to investigate Airco's new No. 50 Travograph. For complete information write your nearest Airco office for the new catalog just coming off the press.



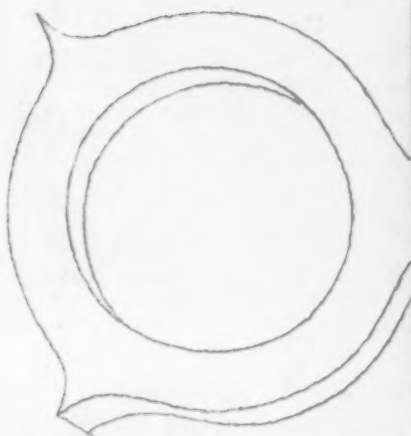
AIR REDUCTION

AIR REDUCTION SALES COMPANY • AIR REDUCTION MACHINERY COMPANY
 AIR REDUCTION PACIFIC COMPANY
 REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL
 Divisions of Air Reduction Company, Incorporated
 Offices in Principal Cities

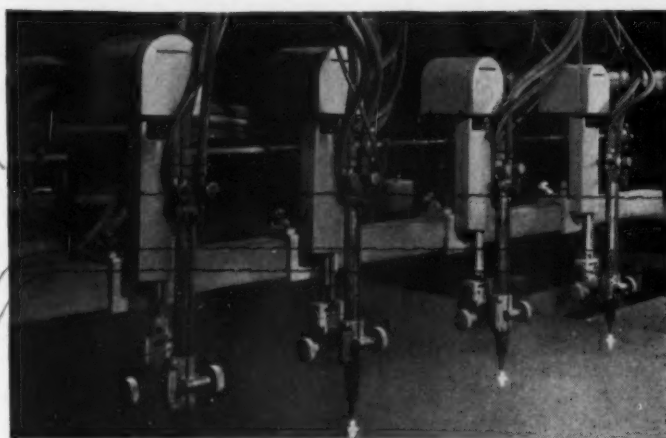
AIR REDUCTION . . . PIONEER



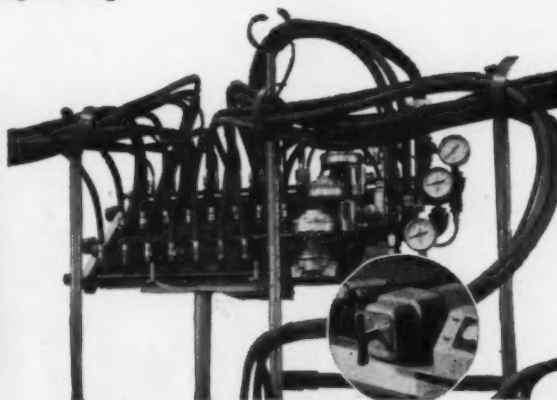
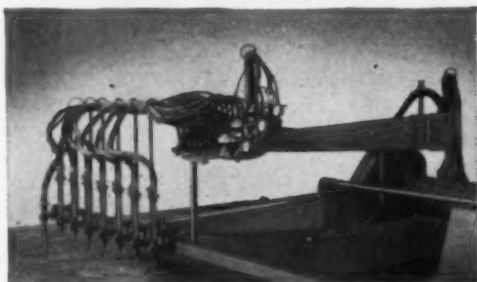
WIDE CUTTING RANGE — The No. 50 Travograph cuts circles up to 144" and any shape that does not exceed 92" x 144" on one side. Carriage speeds range from 2" to 35" per minute on the low side; 10" to 168" on the high side, permitting a wide cutting range and allowing high speed positioning over the work.



SELF-SUPPORTED MANIFOLD — This individual pantograph arm supports the entire weight of the gas distribution equipment, and is guided by the tracer bar, so that the manifold-torch relationship remains constant. The useful load capacity of the tracer bar is greatly increased because it carries no gas equipment except torches.



MOTORIZED TORCH HOLDER — This remote control motorized holder permits torches to be raised or lowered individually or simultaneously. Fingertip regulation by the operator allows close control of the space between the cutting tip and the material. Torches may be raised or lowered when bevel cutting without upsetting the bevel angle setting.



GAS DISTRIBUTION SYSTEM — A twist of the selector switch located on the remote control box at the "operator's station" gives complete control of preheating gases and cutting oxygen. This operates one to eight torches, and assures a properly adjusted flame for repetitive cutting operations. This remote control is made possible by solenoid operated valves located on the manifold.

DESIGNERS OF FLAME CUTTING MACHINES FOR EVERY PURPOSE

"An Invitation to Progress" Theme of N.A.E.B. Convention in Detroit May 2-4

A comprehensive program covering the impact of current economic trends, governmental actions, and new organizational procedures on buying for higher educational institutions has been prepared for National Association of Educational Buyers' annual convention. The meeting will open May 2 in the Hotel Statler, Detroit, Mich. Theme of the thirtieth annual affair is "An Invitation to Progress."

One of the highlights of the session will be a symposium on May 3 entitled "Washington and the Colleges", a thoroughgoing discussion of the relationship of various Federal agencies and activities to the problem of educational buying. The symposium will be conducted by Bert C. Ahrens, executive secretary of N.A.E.B.

Keynote address of the symposium will be made by A. N. Weckler, Washington Editor of *PURCHASING Magazine*, on "Federal Controls and College Procurement." Mr. Weckler is a journalist of wide experience, particularly in business and governmental fields, and a close observer of the Washington scene. He is in daily contact with the officials now charting the course of the national economy, and will have up-to-the-minute information on latest policy developments and their significance. His reporting of procurement methods in World War II is cited in the official Library of Congress publication: "Selected Documentation on the Economics of War."

Other speakers at the session will be Edmund Baxter, Coordinator of Property Utilization Program for Health and Education, Federal Security Agency, and George Van Dyke, Specialist for College Business Management, Division of Higher Education, U. S. Office of Education.

Mr. Baxter will present the current picture of federal surplus and its utilization by educational institutions under Public Law 152. Possibilities of procurement from this potentially advantageous source will be described. It is expected also that Mr. Baxter will be able to answer questions from the buyers on the important problem of how to dispose of unwanted surplus.

Mr. Van Dyke's talk will deal with a variety of topics of interest to college buyers and business officers, including questions of social security and taxes.

The convention will open on Wednesday afternoon, May 2, with the annual business officers' conference. F. Morris Chochran, vice-president and business manager of Brown University will be in charge. The principal address will be given by Dr. Theodore O. Yntema, vice-president in charge of finance at Ford Motor Company. Dr. Yntema, who has been a professor of economics and business administration at Stanford and University of Chicago,

and a consultant in economics for the U. S. Steel Corporation, is currently serving with the Economic Stabilization Agency. Another feature of the session will be the small college business system clinic, presented by members of the group. It will analyze and discuss the business procedure involved in small colleges and universities.

The traditional warm-up party will be held in the Rackham Building on Wednesday evening. Bud Guest, son of Edgar A. Guest, will speak.

C. F. Ogden to Speak

The first general session will be held on Thursday morning, May 3, Rev. J. Leo Sullivan, S.J., N.A.E.B. president, in charge. Principal speaker will be C. F. Ogden, purchasing agent of The Detroit Edison Company, and vice-president for District 4, National Association of Purchasing Agents.

Dr. David D. Henry, president of Wayne University, Detroit, will address the group following luncheon on Thursday. His subject will be "The Business Officer in University Management."

N.A.E.B. vice-president Kermit A. Jacobson, will preside.

Following the symposium on Thursday afternoon will be the Educational and Institutional Cooperative service program.

Friday's program will open with a visit to the Ford Motor Company plant, with luncheon served at the plant. The regular commodity discussion will be held that afternoon, led by William Jamison of Girard College.

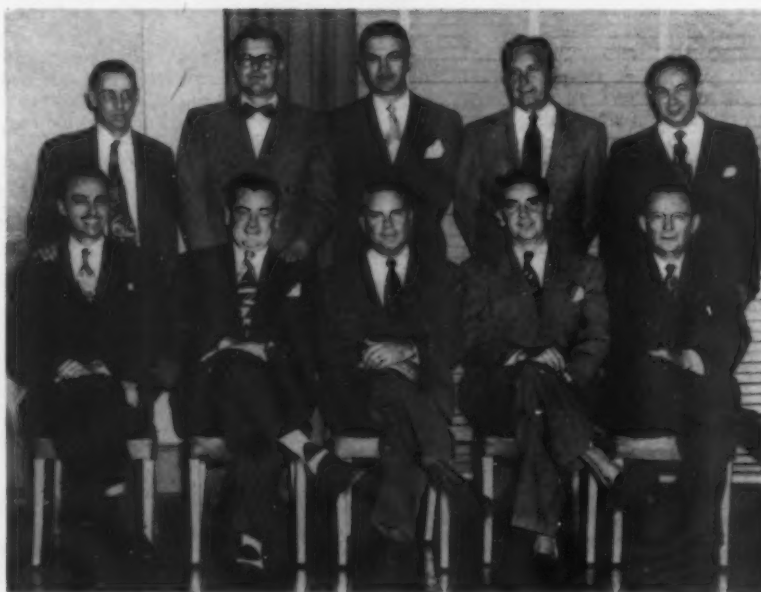
Presiding at the Ford Luncheon will be E. H. "Hop" Brill, purchasing agent for Rutgers University.

The annual president's inaugural banquet will take place in the evening. Ralph L. Lee of the department of public relations, General Motors Corporation, will speak on "Purchasing, Man to Man." Father Sullivan will install the new officers for 1951-1952.

Robbins to Present Skits

A group of skits written and directed by Leslie Robbins, University of Colorado will be presented on Saturday morning. They are entitled "Purchasing Problems Demonstrated." A similar presentation was one of the features of last year's convention. The meeting will close with a convention summary, a new innovation, given by Col. L. B. Wikoff, secretary-treasurer of Wentworth Military Academy.

Peters New Head of Houston Association



Shown above are new officers of the Purchasing Agents Association of Houston. They were installed at the annual inaugural ball held on March 2 at the Shamrock Hotel.

Marshall W. Peters, acting assistant purchasing agent of Humble Oil & Refining Co., (front row, center) is the new president. Other officers (seated) are J. F. Florian, Gulf Brewing Co., first vice-president; R. J. Gallagher, Metal Goods Corp., national director and retiring

president; Mr. Peters; Gene Walker, United Gas Corp., second vice-president; and N. E. Waldier, Humble Oil & Refining Co., secretary. Standing, C. S. Frink, Dow Chemical Co., alternate national director; Lorain Williams, Peden Iron & Steel Co., John D. Mihalick, Emsco Derrick & Equipment Co., and F. Gayle Hawk, Shell Oil Co., local directors; and Charles O. Brotherton, Gulf Oil Corp., treasurer. (Other picture on page 234).

If you are looking for the most economical fastening device to give bolted assemblies on your product the most dependable, enduring performance, check these Reliance Spring Lock Washer advantages against any other fastening device you may be using or considering—

no other fastening device gives you all these advantages

FOR LOWER ASSEMBLY COSTS

use Eaton Springtites or Sems—special-design Reliance Spring Lock Washers pre-assembled on bolts or screws—speed assemblies, reduce inventory difficulties, cut costs. Write for Springtite bulletin.



RELIANCE SPRING LOCK WASHER ADVANTAGES	WHAT THEY MEAN TO YOU
Adequate Tension	Prevents nut from backing off threads. Compensates for looseness as a result of wear.
Helical Design Coil	Provides, through natural means, maximum reactive range and pressure—keeps bolted assemblies tighter longer.
Cold Drawn Spring Steel Section	Section design can be varied to meet the job requirements. Heavier and wider cross sections develop greater reactive pressure. Offers greater fatigue resistance than devices made from light-section flat rolled material.
Bearing Surface for Full Nut	Can be used with any standard or special nuts. Does not depend for security on single-thread engagement and can not be destroyed through over-tightening.
Perfect Hardened Thrust Bearing	Washers are free to rotate, permitting greater tightening torque and reducing to a minimum resistance to tightening from surface friction.
Full Thread Engagement	Direct reactive pressure is exerted between nut face and bolted surface—cannot damage threads.
Wide Variety of Uses	Can be used in any bolted assembly from a locomotive to the smallest scientific instrument.
Made From Various types Of Metal	Reliance Spring Lock Washers are made from carbon, alloy and stainless steel, K-Monel, bronze and aluminum.
American Standards Association Specifications	Manufactured to the A.S.A. Specifications in all sizes — Reliance Rib, Positive Wedge Spring, Springlox, Knolink, Wide Bearing and Double Coil types for special application.
Easy To Use	No special skill required—one piece construction—no parts to come loose or fail. No projections to injure user or damage materials.
Inexpensive	The lowest cost tension fastening device for its weight and combined features on the market.
Eaton-Reliance Manufactured	The Eaton-Reliance reputation and the experience of more than 35 years of spring lock washer manufacture guarantee a commercially-perfect product and assure customer satisfaction.



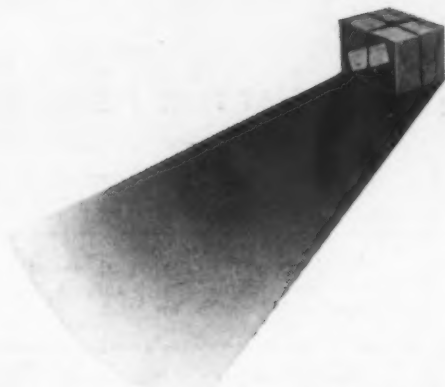
RELIANCE *Spring* LOCK WASHERS

EATON

EATON MANUFACTURING COMPANY



RELIANCE DIVISION, MASSILLON, OHIO



The MOST EXPENSIVE SHIPMENT in the U.S.A.!

Radium? Diamonds? Uranium? Not at all . . . just a small but vital replacement part . . . *that arrived too late!* And because it arrived too late, a whole production line was halted for precious hours, hundreds of workers were idle and national defense suffered.

Now, more than ever, Purchasing Agents and Traffic Managers need high speed and dependability in air transportation. Yet stepped-up defense demands have greatly reduced air lift capacity and will reduce it even more. That's why the kind of air transportation Emery Air Freight provides—instant, flexible access to *every* channel of transportation . . . hundreds of trained Expeditors strategically scattered throughout the country—can mean so much to you today! Emery's service works this way:

A call to your *local* Emery office starts your purchase order number and instructions speeding by direct wire to your supplier's city. There, an Emery Expediter picks up your shipment . . . gets it on the *fastest* available plane. Everywhere enroute Emery *acts as your own personal expeditor* . . . circumvents transfer delays . . . wires reports on your shipment's progress . . . personally delivers it *directly* to your receiving room.

Get the complete story on this unique advance in transportation service *today!* Emery is on the job 24 hours a day, *every* day of the year. REMEMBER . . . *the most expensive shipment is the one that arrives too late!*



EMERY AIR FREIGHT CORPORATION

General Office: 801 Second Avenue, New York 17, ORegon 9-1020

Offices in Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Newark, Los Angeles, Milwaukee, Philadelphia, Pittsburgh, St. Louis, San Francisco, Syracuse, Washington, D. C.

Agents in all other major cities and towns in the U.S.A.

(Continued from page 218)

room in the industry for much greater standardization than we now practice.

Non-standard equipment save in exceptional cases, is a luxury we cannot afford and cannot justify. A concentrated effort must be made to limit even further the number of sizes and ratings of practically every piece of electrical equipment, small and large.

Standardized equipment costs less, partly because it costs the manufacturer less to make and partly because you pay less and can use it in larger quantity. One of our departments some years ago made a study of the metal washers it was keeping in stock and was able to reduce the varieties from 1350 types to 150. That saved us \$25,000 a year.



Lloyd W. Wieder of the Allentown-Bethlehem Gas Co., finds the program to be a meaty one.

In addition to cost savings, some other advantages of standardization are quick deliveries made from stock, reduction in the number of manufacturing errors, and simplified operation, maintenance and training.

Packaged units mark another trend, according to Mr. Johnson. They are particularly advantageous wherever they can be assembled, tested and shipped as a self contained unit. The trend is to take complete equipment or parts and build them in packaged pieces than can be shipped on public transportation facilities. Packaged units will be used to a greater extent.

New Materials

R. C. Bergvall, engineering manager, Industrial Products, Westinghouse Electric Corporation, next presented an interesting talk on "The Increasing Influence of Materials on Equipment Design." Mr. Bergvall's paper is published in this issue of Purchasing.

(Please turn to page 228)

Remember—

the trade marks "tt" and "TUBE-TURN" are applicable only to products of TUBE TURNS, INC.



Bring on your severe conditions—

YOUR FIRST CHOICE for *severe service* conditions in piping is the TUBE-TURN Welding Neck Flange. It is engineered with a long tapered hub and a smooth transition in thickness to the pipe-end bevel. This means greater pressure-containing capacity under extreme temperature as well as much longer life than other types when repeated pipe bending or severe vibrations are involved.

For other jobs choose from these TUBE-TURN Welding Flanges: slip-on flanges; lap-joint flanges; socket-welding flanges; blind flanges; orifice flanges; pipeline non-standard flanges. Get in touch with your nearby TUBE TURNS' Distributor. You'll find one in every principal city.

Write Dept. P-4 for free booklet, "Research on the Cyclic Life of Piping Systems."



"Be sure you see the double tt"

TUBE TURNS, INC. LOUISVILLE 1, KENTUCKY

DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Chicago • Houston • Tulsa • San Francisco • Los Angeles
TUBE TURNS OF CANADA LIMITED, CHATHAM, ONTARIO . . . A wholly owned subsidiary of TUBE TURNS, INC.



Welded wrought-iron lines serve new Hospital Buildings

Underground tunnels at Cleveland's City Hospital contain the old and the new in piping. New 125-pound steam main (Fig. 1) serving several new buildings is welded. A welded system with TUBE-TURN Fittings was chosen to cut installation time, and to get tight, leakproof joints.

New welded line (Fig. 2) elbows neatly over an older pipe. When space is confined like this, welding is the answer. Contractor welded pipe from 2" up to 12" in tunnels, boiler room and power house.

With welding equipment on the job it's easier to put up pipe supports too. Eyebolt (Fig. 3) is quickly welded to TUBE-TURN Elbow, support rod hooked through it. This steam line to the water heaters must be secure.

Insulation on the maze of piping to the boiler feed pumps (Fig. 4) went up fast, with no flanges to work around. In such close quarters a neat design and reduced space requirements are especially important. And with the pipe welded to TUBE-TURN Fittings, joints won't leak, and insulation will last.



DISTRICT OFFICES
New York
Philadelphia
Pittsburgh
Chicago
Houston
Tulsa
San Francisco
Los Angeles

TUBE TURNS, INC.
LOUISVILLE, KENTUCKY

Want research data?

Tube Turns, Inc. has prepared a booklet based on tests to determine cyclic life of piping systems. If you'd like a free copy just send the coupon.



TUBE TURNS, INC., Dept. P-4
224 East Broadway • Louisville 1, Kentucky

Your Name
Position
Company
Nature of Business
Address
City State



Fig. 1. Welded underground steam main.



Fig. 2. New welded piping fits in small space.



Fig. 3. Support on steam line elbow.

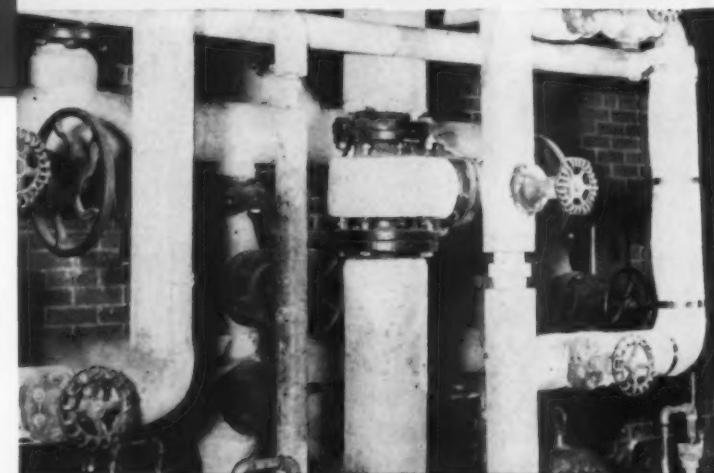
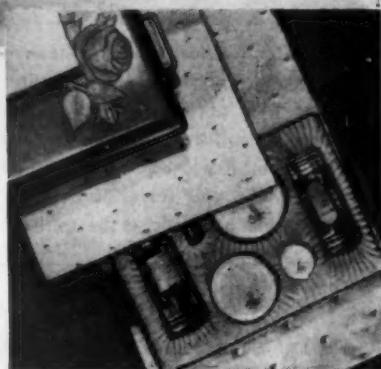


Fig. 4. Insulated welded piping.

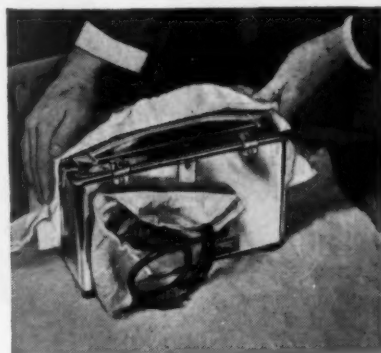
Kimpak* Float Packaging



TELEVISION SET
Admiral Corp., Chicago



Cosmetics, by
Max Factor & Co., Hollywood, California.



Sterilizer, manufactured by
Pelton & Crane, Detroit, Michigan.

Cuts shipping costs — reduces damage in transit!

Have you ever received a compliment on the packaging of your product? Have you ever been told by a customer that your products always arrive in perfect condition—and looking fresh, neat, attractive? Most companies never do, until they switch to KIMPAK* Float Packaging—the world's cleanest, most effective shipping protection.

KIMPAK creped wadding not only affords maximum protection (at lowest true cost), but helps make your product look "well-dressed." Soft, snowy-white KIMPAK is available in various thicknesses to provide optimum protection from damage to your product—and in a wide range of roll and sheet sizes to facilitate

your packaging operation. It's easy to handle, too—saves literally hours in the shipping room—then defends against damage from shock, scratching and vibration. It cushions your product during rail, truck, air or water transit, as well as in storage.

Try KIMPAK soon—for any of the Four Basic Methods of Interior Packaging: Bracing and Blocking, Flotation, Surface Protection, Absorbent Packaging. For complete information, see your nearest KIMPAK distributor listed in classified telephone directories under "Packing Materials" or "Packing Materials—Shipping"; or write to Kimberly-Clark Corporation, Neenah, Wisconsin.

Kimpak

REG. U.S. PAT. OFF. & FOREIGN COUNTRIES



CREPED WADDING

*T. M. REG. U. S. PAT. OFF. & FOREIGN COUNTRIES

FREE BOOKLET!

KIMBERLY-CLARK CORPORATION
Neenah, Wisconsin P-451

Please send me free, the illustrated
KIMPAK booklet, "Float Packaging."

Name

Address

City, Zone, State



It's wise to buy HARRISBURG!



For 98 years, Harrisburg has been making custom-built quality products... in quantity. If you aren't acquainted with the Harrisburg line of specialized steel products, we invite you to write for catalogs and prices. If you have a special problem, let us try to help you solve it. Replies are prompt, information authentic, in the spirit of service.

SEAMLESS STEEL HIGH-PRESSURE GAS CYLINDERS, a complete line by Harrisburg. We also make seamless steel pipe couplings, drop-forged steel pipe flanges, propane gas cylinders, commercial drop forgings.

WHO MAKES IT
makes the difference

HARRISBURG
STEEL CORPORATION



Custom-Built Quality Products in Quantity
98 YEARS IN PENNSYLVANIA'S CAPITAL

Harrisburg 19, Pennsylvania

Since 1887

**MILWAUKEE
WROT WASHERS**

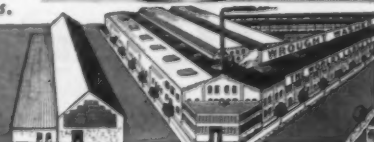
Better
WASHERS
... Competitively Priced

Large volume production, the most advanced methods and facilities, plus more than 60 years of continuous experience in the manufacture of Washers, are factors that enable us to offer you top quality washers and stampings at competitive costs. Over 22,000 sets of dies for making Washers of every type (Standard and Special), from every type of material, for every purpose, in any finish. **STAMPINGS** of all descriptions; Blanking, Forming, Drawing. Submit your blueprints and quantity requirements for estimates.

**WROUGHT WASHER
MANUFACTURING CO.**

The World's Largest Producer of Washers

2113 S. BAY ST., MILWAUKEE 7, WIS.



(Continued from page 224)

K. W. Haagenon, director of public relations, Allis-Chalmers Manufacturing Co., Milwaukee next spoke on the subject "What Kind of a Salesman are you?" In his talk he dealt with the need for selling the American Way in contrast with socialistic and other utopian theories, stating that it is the responsibility of American business to explain economic fundamentals to the American people, and that one of the most important "customers" we have in selling the American Way of life is our own employees. While we are the best salesmen in the world when it comes to selling our products, we are the lousiest of salesmen when it comes to selling the American Way.

"We have got to prove by our words and by our deeds that we understand the problems of humanity", he said. "We must have those qualifications if we are to sell the American Way of life. Industry must have a constructive program of helping employees with problems. You cannot measure in dollars and cents the value of helping employees solving various of their problems."

Mr. Haagenon also emphasized that there must be complete understanding on the part of everyone, of our political system. He declared that we "must have satisfied citizens else they may look to other ideologies. It is time that Americans go up and down the countryside teaching the glad tidings of the American Way of life. We live in the greatest nation in the world, but we do not talk about it and we do not promote it. We have the greatest merchandise in the world, but you cannot sell your product unless you believe in it and unless you sell it morning, noon and night. The big question is—What kind of a salesman are you in the grave responsibility of selling the American system to the American people?"

S. J. Rosch, consulting engineer, Anaconda Wire & Cable Co., Hastings on the Hudson, New York, was the next speaker, his subject being Adventures in Modern Industrial Research. Mr. Rosch explained the functions of a catalyst, and exhibited and explained the atomic formulation of a number of products made of gases—made possible, as he explained, by the catalyst.

The things being accomplished by the wizardry of chemistry today,

(Please turn to page 230)

Hanson-Whitney

STANDARD TAPS and GAGES

NOW STOCKED



by INDUSTRIAL DISTRIBUTORS

To better serve our customers in their own territories, Hanson-Whitney Taps will now be merchandised thru a national set-up of Industrial Distributors. Standard sizes and types will be stocked in important tapping centers for fast delivery to more users, over a greater area.

During 1951 we shall back up our Distributors with H-W advertising in 8 publications reaching 1,587,600 readers. We have a new, sturdy, attractive, clearly marked package. Dealer helps will be supplied from time to time . . . and every effort will be made to insure better tapping results at lower costs . . . with recommendations from H-W engineers on request.

Gages may not be completely stocked in the field, but all standard sizes are available for immediate delivery.

NEW TAP PACKAGE

Colorful blue, black and white packages are easily identified on the shelves. Size and type figures are clearly marked. Taps are separated in the metal-edged box and further protected with an outside shipping carton.



HANSON-WHITNEY COMPANY • HARTFORD 2, CONN.
DIVISION OF THE WHITNEY CHAIN COMPANY

SOME TERRITORIES NOW OPEN
FOR QUALIFIED DISTRIBUTORS

Hanson Whitney

PIONEERS OF FINISHED TAPS



Now! **KEX PUTS SAFETY MESSAGES RIGHT INTO YOUR EMPLOYEES' HANDS**

HERE'S AN ADDITIONAL KEX SERVICE that ties in with your *Safety Program*—flashes its messages to the employee right at a place *where accidents happen*. And builds better employee relations.

Now a percentage of KEX® towels have printed on them safety slogans such as—Work Safely—Apply More Caution; Alert Today—Alive Tomorrow; Always Alert—Nobody Hurt; to mention a few.

In these days when skilled hands are so important, KEX puts into them not only a wiping tool that does a faster, more efficient job, but which also helps protect them.

INVESTIGATE KEX NATIONAL SERVICE—the smooth-flowing service that means regular delivery of industrial wiping towels, in any desired quantity, that are hygienically clean, uniform in size, weight and quality, are highly absorbent, and simplify plant housekeeping.

No investment. Nothing to buy. Only a low rental charge per towel. *And your source of supply of KEX safety towels is automatically assured!* Look for your local KEX distributor in your classified phone book. Or write—



"KEX"
* REG. U.S. PAT. OFF.

**NATIONAL
SERVICE**

295 Fifth Ave., New York 16, N. Y.

(Continued from page 228)

put Aladdin and his lamp to shame, he said. The catalyst, he explained is an agent in whose presence one or more chemicals can be caused to form a new material, though the catalyst is not a part of the new product and can be used over and over again.

The future of all of our materials will be definitely concerned with gases, he said. Purchasing agents in the future will be confronted with a tremendous number of products made from gases—i.e., "nothing". The possibilities for future types of materials have not been scratched, in the realm of chemical research.

Tuesday afternoon, the 20th Annual Conference was concluded by a panel Discussion on Government Priorities and Regulations. C. F. Ogden and R. C. Wenz represented purchasing on the panel, with three representatives of Government agencies, namely: Robert M. Hatfield, Director Power Equipment Division, NPA, Paul Andrews, Brass Division, NPA, and Harry I. Miller, Acting Chief, MRO and Minor Construction.

George Cole of the Alabama Power Company, Birmingham, Ala., wound up the meeting with the report of the Resolutions Committee, consisting of himself, Robert F. Isenhardt, and A. Ziegler. The report was duly approved.

♦ ♦ ♦

INDUSTRY EXECUTIVES GUESTS AT HAWAII ASSN. MEETING

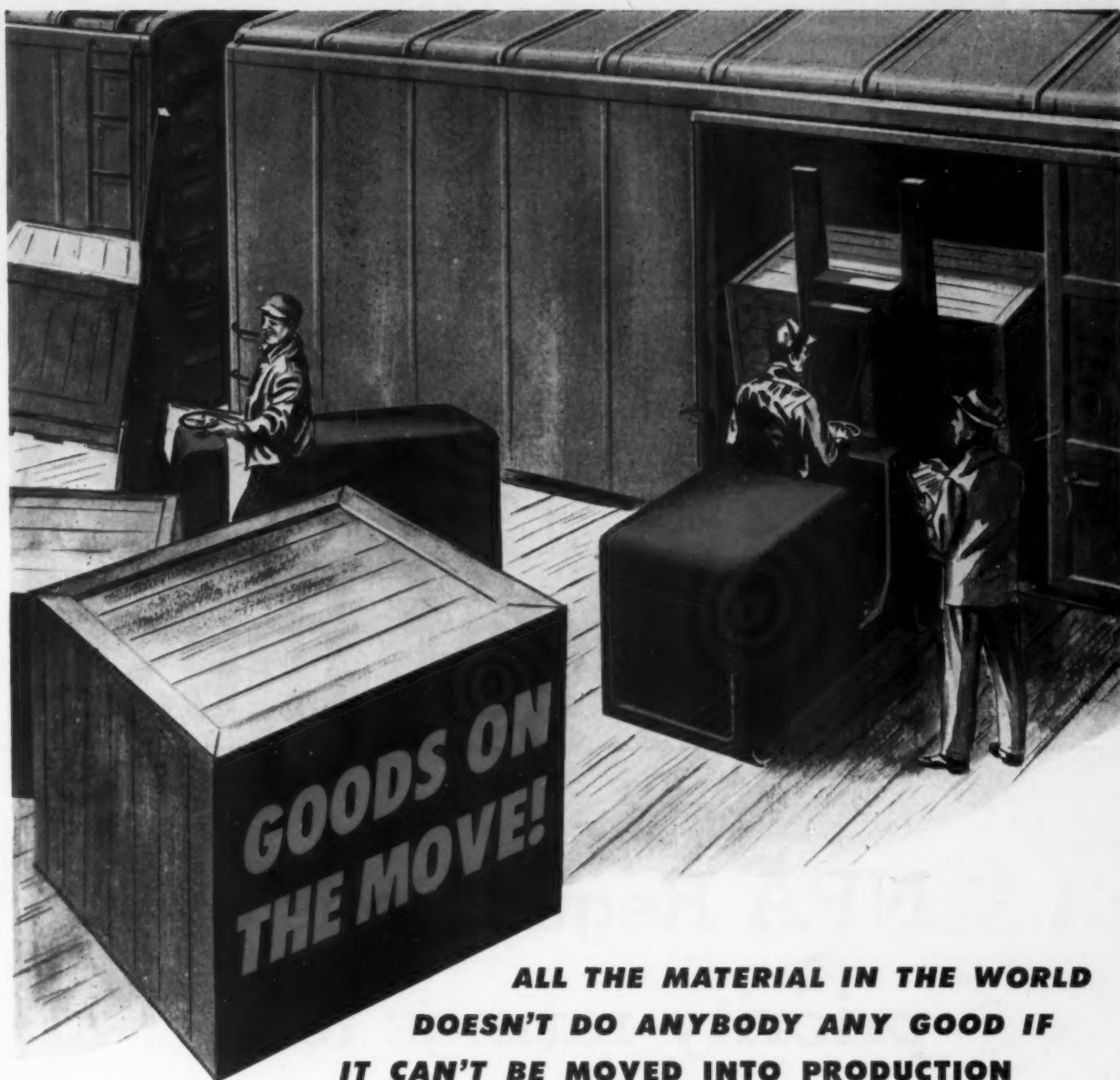
A regular meeting of the Purchasing Agents Association of Hawaii was held on March 8, at the Pacific Club, Honolulu. Guest speakers were Walter H. Gebhart, vice-president of the Disston Company, and Rodman W. Chamberlain, vice-president of Stanley Works.

Mr. Gebhart spoke on the importance of N.P.A. Regulation 4, covering maintenance, operating and repair requirements, to the operation of local industry. Mr. Chamberlain commented on the effect of the several restrictive-use orders issued by N.P.A. He said that although the orders as originally issued would have resulted in severe restrictions on many items, relaxation in specific instances has corrected these conditions.

Lionel Lino, Hawaiian Electric, told members that several highly complimentary communications had been received from officers of the National Association of Purchasing Agents on the recently completed education program of forum lectures and discussions conducted by the local association.

Members of the association were guests of the Hawaiian Electric Company at a tour of the Waiau Plant on Thursday evening, March 22.

(Please turn to page 234)



**ALL THE MATERIAL IN THE WORLD
DOESN'T DO ANYBODY ANY GOOD IF
IT CAN'T BE MOVED INTO PRODUCTION**

That movement of materials is sped immeasurably by material handling equipment, designed and produced by that alert industry. Thus, hundreds and thousands of tons of products are moved into production *easily, safely, economically*. Much of this tonnage is moved by equipment built, fastened and made stronger with Sterling Bolts and Nuts—because Sterling Bolt products in volume have proved their merit for more than 30 years. This is a matter of record with buyers of bolts and nuts in production quantities.

BE SURE TO SEE THE GREAT MATERIALS HANDLING EXPOSITION

TIME: April 30 through May 4.

PLACE: International Amphitheatre—Chicago

STERLING BOLT BOOTH: Number 407

STERLING BOLT co.



General Offices: 369 W. Erie St., Chicago 10, Illinois
Cincinnati, Indianapolis, Milwaukee, St. Louis



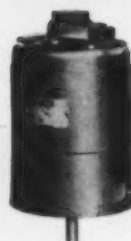
STANDARDIZED FRACTIONAL HORSEPOWER MOTORS



Right Angle Gear



Oil Burner



Jet Pump



Shaft-Mounted Fan

You can get these

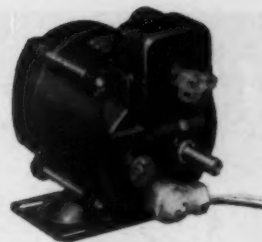
**NPA Regulations give
priority ratings to a
great variety of
motor-driven products
for business and
industrial use.**



Unit-Bearing Fan



Sump Pump



Gas Pump



General Purpose



Belted Fan



Gear-Motors

G-E Motors—FAST!

IF YOU have a D. O. rating or if you manufacture products used as maintenance, repair or operating supplies for business or industrial purposes, you **MAY** now be entitled to a priority rating which will enable you to purchase the fractional horsepower motors you need. *And General Electric can fulfill your standard-motor requirements faster than you might think!*

Barring unforeseen emergencies or new rulings subsequent to the writing of this message,

General Electric has the facilities to handle your priority needs with pre-Korea speed. What's more, General Electric application engineers stand ready to help you design or re-design your products so that standard motors can be used to *your best advantage.*

Write, wire or phone the nearest General Electric office or your nearest authorized distributor to start the ball rolling. *General Electric Company, Schenectady 5, N. Y.*

TIMELY HELPFUL BULLETINS

These recent bulletins have been specially prepared to help you make better use of G-E motors and services. Send for them today.

General Electric Company, Sec. A700-114
Schenectady 5, N. Y.

Please send me the following publications on G-E fractional-hp motors:

- ☐ GEA-3989—description of all G-E Factory Service Plans
- ☐ GEA-5566—detailed explanation of how to use the G-E Motor Exchange Plan
- ☐ GEA-5174—description of standard G-E fractional-hp motors
- ☐ Please have salesman call

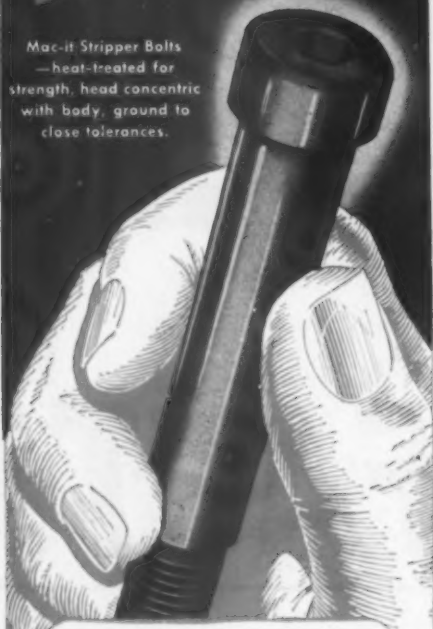
NAME _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____

GENERAL  **ELECTRIC**
700-114

IT'S A

Mac-it
PRONOUNCED
"MACK-IT"

Mac-it Stripper Bolts
— heat-treated for
strength, head concentric
with body, ground to
close tolerances.



**Better, Faster Service
with this
Complete Mac-It Line!**

Because many standard types of Mac-its are available throughout the country for quick delivery, and because specials can be engineered to your own specifications, you'll find it pays to investigate Mac-its first.

Mac-it's 38 years' experience in the manufacture of heat-treated, alloy steel screws is your assurance of precision, uniformity and strength. Sold through leading industrial distributors from coast to coast and in Canada. Write for new Mac-it catalog today!

Other Mac-It products include:

- Hollow Lock Screws
- Socket Head Cap Screws
- Hollow Set Screws
- Hollow Pipe Plugs
- Socket Screw Keys
- Square Head Set Screws
- Hexagon Head Cap Screws
- ... and many others

Marketed Nationally Since 1912 by
STRONG, CARLISLE & HAMMOND COMPANY
Cleveland 13, Ohio

**WASHINGTON ASSN. SEES
"STEEL BUILDS THE WEST"**

A regular meeting of the Purchasing Agents Association of Washington was held on March 8, at the New Washington Hotel, Seattle. Feature of the program was a color and sound film entitled "Steel Builds the West". The film, produced by the Bethlehem Pacific Coast Steel Corporation, shows the role played by steel in many industries. It gives an inside view of steel on the job, and the manner in which it has helped improve the standard of living. Harold Gray, sales manager for the company, introduced the picture, and answered questions following its showing. Frank Bergmann discussed the latest N.A.P.A. releases.

♦ ♦ ♦

**MONTREAL ASSOCIATION HAS
ANNUAL CURLING BONSPIEL**

The Annual Curling Bonspiel of the Purchasing Agents Association of Montreal was held at the St. George Club, Westmount, on Wednesday, March 14. The game was held in the afternoon and dinner followed at the club house.

♦ ♦ ♦

**TWIN CITY ASSOCIATION SEES
FILM ON ENGINEERING**

A regular meeting of the Twin City Association of Purchasing Agents was held recently at the Radisson Hotel, Minneapolis. Feature attraction was a full-color, non-commercial film entitled "Hidden World". Presented by the Allis Chalmers Mfg. Co., the picture was a salute to the engineering profession, with a complete study of engineering in action. An Allis Chalmers staff member introduced the film.

♦ ♦ ♦

EASTERN N. Y. MEETING

A regular meeting of the Purchasing Agents Association of Eastern New York was held on Thursday, March 15, at Wolferts Roost, Albany, N. Y. The program featured a commodity discussion.

NEW HOUSTON PRESIDENT



Marshall W. Peters, new president of the Houston Association receives congratulations on his election. At center, R. J. Gallagher, retiring president. At right, Sam H. Harper, N.A.P.A. vice-president for District 2.

Need **VOLUME**
on Small Parts
Like
These?



**Investigate
MULTI-SWAGE**

Economy Way to Get Volume!

If it's **VOLUME** you need on small tubular metal parts similar to these, be sure to look into Bead Chain's **MULTI-SWAGE** Process. Send the part (up to 1/4" dia. and to 1 1/2" length) and your specs for a quotation. Chances are you'll find a new way to effect important savings.

Much Cheaper Than Solid Pins

Many prominent users of solid pins for electronic and mechanical purposes have cut costs by switching to Multi-Swaged tubular pins . . . without sacrificing strength or accuracy. Often this is possible to accomplish.

Typical Applications —

As terminals, contacts, bearing pins, stop pins, male-female connections, etc., in a wide variety of electronic and mechanical products:—Toys . . . Business Machines . . . Ventilator louvers . . . Radio and Television apparatus . . . Terminal-boards . . . Electric Shavers . . . Phono Pick-ups, etc. For **DATA BULLETIN**, write to



The **BEAD CHAIN** Mfg. Co.

129 Mountain Grove St., Bridgeport 5, Conn.

Manufacturers of **BEAD CHAIN**—the kinkless chain of a thousand uses, for fishing tackle, novelty, plumbing, electrical, jewelry and industrial products.

Rope leads from **UPSON-WALTON**



How to lubricate wire rope

● Each wire in a rope is a "live wire"—since it moves with respect to its neighboring wires every time the rope bends or flexes. This causes wear, which can be reduced by proper lubrication.

In an Upson-Walton rope every wire is lubricated as it is stranded—thus lubrication is built in. However, for long life this lubrication should be repeated periodically. Use a lubricant which:

- is commercially chemically neutral.
- can penetrate between the wires and strands and to the core of the rope.
- is adhesive enough not to be thrown off by vibration.
- will not either harden or soften under extremes in temperatures.

With proper care Upson-Walton wire rope will give you longer life, greater safety and greater economy. Use of the best materials and methods, and thorough testing are your assurance of quality. Specify Upson-Walton on your next job.

THE UPSON-WALTON CO.
CLEVELAND, OHIO

NEW YORK • CHICAGO • PITTSBURGH

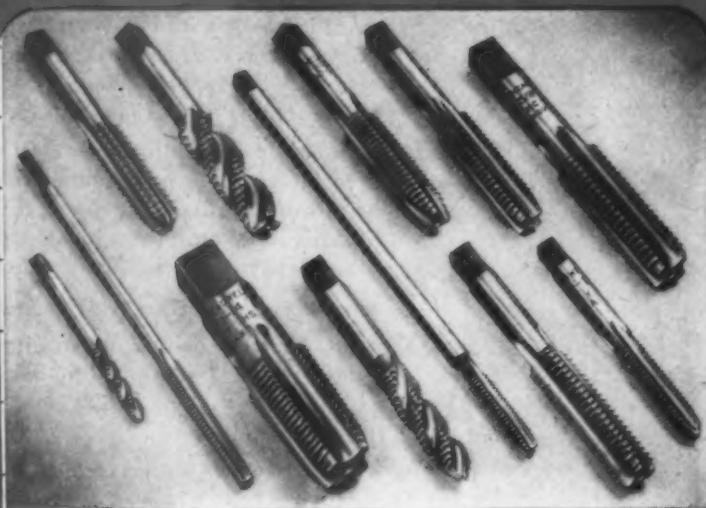
**wire rope • rope fittings
• tackle blocks**

MATCH YOUR WIRE ROPE TO YOUR FITTINGS AND BLOCKS... ONLY UPSON WALTON OFFERS ALL THREE

Threadwell
Tools do
many jobs



they can do your tough ones



Let's face it. This is no time to be pussyfooting around hoping that this and that will work out. This is a time when more work and less talk is no joke but a grim necessity. Threadwell Taps and cutting tools will do more work for you, and their superior performance will do our talking for us. We think you can save a lot of precious time and money by specifying Threadwell in the first place.

Threadwell

THREADWELL TAP & DIE CO. GREENFIELD, MASS

COMMERCE DEPT. OFFICIAL AT CHATTANOOGA MEETING

The regular monthly meeting of the Purchasing Agents Association of Chattanooga, held in February, featured an address by C. E. Jordon, acting manager of the Chattanooga district office, U. S. Department of Commerce. Mr. Jordon's subject was "National Production Authority Regulations."

1 1 1

"ALUMINUM" SUBJECT AT RHODE ISLAND MEETING

A Visual Education Program was featured at the February 20 meeting of the Rhode Island Purchasing Agents Association, held in Rogers Hall, Brown University, Providence. The program was centered on the film "This Is Aluminum", supplemented by an illustrated pamphlet prepared in cooperation with the Aluminum Association. R. E. Hamilton, of the Aluminum Company of America gave a brief, verbal preview of the picture and led the general discussion that followed it.

1 1 1

DAYTON ASSOCIATION HAS "PRESIDENTS' NIGHT"

The annual Presidents' Night Meeting of the Purchasing Agents Association of Dayton was held in February. Members of the Cincinnati Association, the Springfield Association, and the Dayton Association attended.

Pinch hitting for H. F. Jones, N.A.P.A. president, who was unable to fill his engagement as principal speaker because weather conditions made it impossible for him to reach Dayton on time, was Herbert L. Brown, a new member of the local association who is Procurement Consultant for the U. S. Air Force at Wright Field. With only a few hours' notice, Mr. Brown delivered a highly interesting address on "Purchasing for the Air Force".

Bruce Henderson, vice-president for District 6, reviewed the situation in the district. Seated with him at the head table were Bob Long, Dayton president; Paul Boorum, Dayton's national director; Andy Lincoln and Gil Riches, representing the Cincinnati Association; G. B. O'Meara and Lou Fitch, representing the Springfield Association.

Among the other guests were fifteen members of the class in purchasing at Sinclair College, for which Ted Thompson of Aeroproducts Division, General Motors Corp., is instructor.

1 1 1

SYRACUSE & CENTRAL N. Y. ASSN.

A regular meeting of the Purchasing Agents Association of Syracuse and Central New York was held in the Onondaga Hotel, Syracuse, on February 28. Principal speaker was Cameron Ralston, on "The Five Plagues of Democracy". The commodity discussion was led by A. Willard Hoffman, chairman of the commodity committee.

(Please turn to page 240)

What's U. S. Rubber doing to bridge the gap between hard and soft rubber?



Washing machine parts, formerly made of plastic and metal, now made of new thermosetting plastic, Enrup, which has higher abrasion resistance and is structurally stronger.

The new "U.S." thermosetting plastic, Enrup, can be made flexible and elastic as soft rubber, or rigid as hard rubber. Enrup offers entirely new possibilities to design engineers. The washing machine parts, shown above, are made of Enrup because its abrasion resistance and structural strength are greater than the combination of metal and plastic formerly used.

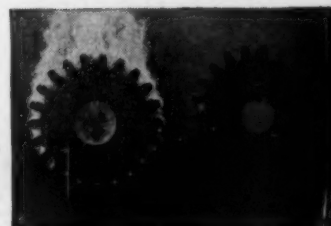
Enrup can be made into almost any shape or form, simple or complex. It can be punched, sanded, sawed, nailed, bolted, molded and machined. Perhaps Enrup is just what you've been looking for to improve your product or your manufacturing operation.

For more details, write to address below.



Some of the products made of Enrup for leading manufacturers. The smallest items weigh as little as one-third of an ounce. Engineers often find Enrup cuts molding costs, permits operating economies hitherto impossible.

Note how a bath of 20 percent solution of sulphuric acid eats away the steel gear at left, while the Enrup gear is unharmed. Enrup is non-conductive, non-absorbent, easy to clean, is noiseless.



PRODUCT OF



UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

APRIL, 1951

Please mention *PURCHASING Magazine* when writing to advertisers.

237

**Utility hose of 101 uses
around the plant or in the field . . .**



Top photo—CMH REX-TUBE Type RT-15 being used to steam out a storage tank. Middle photo—CMH REX-TUBE Type RT-15 used as a gas connection for a furnace. Bottom photo—CMH REX-TUBE Type RT-15 used for unloading a tank car.

Flexon identifies
CMH products that
have served industry
for over 49 years.



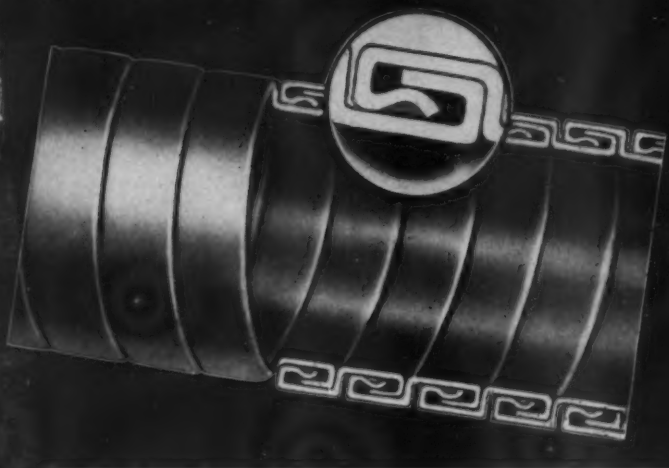
CMH

CHICAGO METAL HOSE Corporation

1310 S. Third Ave. • Maywood, Ill. • Plants at Maywood, Elgin, Rock Falls, and Savanna, Ill.
In Canada: Canadian Metal Hose Co., Ltd., Brampton, Ont.

**ONE DEPENDABLE SOURCE
for every flexible metal hose requirement**

Convuluted and Corrugated Flexible Metal Hose in a Variety of Metals • Expansion Joints for Piping Systems
Stainless Steel and Brass Bellows • Flexible Metal Conduit and Armor • Assemblies of These Components



CMH REX-TUBE Interlocked Flexible Metal Hose

IF you convey steam, tar, asphalt, vegetable oils, hydrocarbons or similar substances between relatively movable parts, CMH REX-TUBE Type RT-15 flexible metal hose does the job economically and dependably. REX-TUBE Type RT-15 combines the long life and durability of metal with an exceptionally high degree of flexibility. Further, it is non-aging, non-contaminating and non-collapsible.

REX-TUBE Type RT-15 is of fully interlocked design in bronze or steel with asbestos packing. (See cross-section above). Suitable for temperatures up to 600° F; pressures to 500 psi. Sizes range from 1/2" I.D. through 12" I.D.

CMH distributors are located in principal centers . . . see your classified telephone directory or write for the name of the distributor nearest you.

There's
NO CLOSED SEASON
ON TOE ACCIDENTS

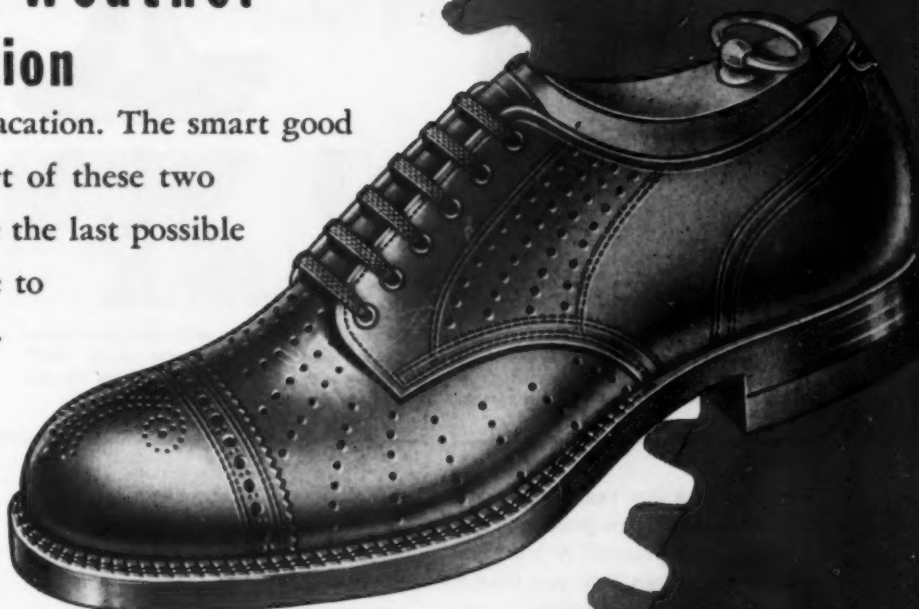


H719 — Men's Brown Side woven blucher Oxford. Weather-wear sole, half-rubber heel. Widths A to E, sizes to 13.

HY-TEST'S Warm-Weather Foot-Protection

Accidents don't take a summer vacation. The smart good looks and air-conditioned comfort of these two popular Hy-Test numbers remove the last possible objections your workers can have to safety toe protection in the warm-weather months ahead.

WRITE FOR FREE CATALOG



H712X2 — Men's Brown Kip ventilated blucher Oxford. Leather sole, half-rubber heel. Widths B to EEE, sizes to 12.

... Insure Workers' Feet in Sure Protection

with
HY-TEST  **SAFETY SHOES**

THE WORLD'S LARGEST SELLING SAFETY SHOE

HY-TEST DIV: INTERNATIONAL SHOE COMPANY • SAINT LOUIS 3, MISSOURI

NEW YORK OFFICE: 225 W. 34TH ST. • EASTERN OFFICE: MANCHESTER, N. H.



Take a Backward Look...



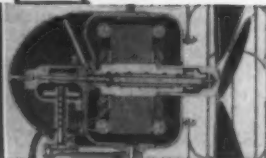
then

FAN-PLAN

for the Future with
**EMERSON
ELECTRIC**
Oscillators



Stationary hollow-steel shaft is case-hardened and rigidly anchored in the motor frame.



Forced-feed lubrication — oil is continuously fed to bearing surfaces by spiral grooves and conveyor return.



Fingertip oscillation control — lets you simply "dial" any sweep, from 90 degrees to stationary.

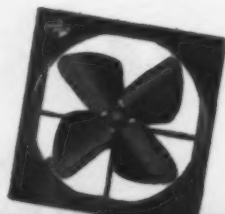
Remember a few years back when you were unable to purchase quality-built equipment? A backward glance today can help you plan for tomorrow... for example, in planning efficient, economical and long-lasting ventilation for your building, the known performance of

Emerson-Electric Oscillators is important. Their record of years of trouble-free service is your assurance of dependable ventilation no matter what the future brings. Fan-plan with the future in mind... see your electrical contractor, or write for free Catalog No. 223A.

THE EMERSON ELECTRIC MFG. CO. • St. Louis 21, Mo.

EVERYTHING IN FANS!

Besides the most complete line of Oscillating Desk and Stand Fans, Emerson-Electric offers Direct- and Belt-drive Exhaust Fans, Air Circulators, Ceiling Fans, Window Fans, and Low Table Fans. Write for Catalog No. 223B.



EMERSON
FANS • MOTORS



ELECTRIC
APPLIANCES

"SO YOU THINK YOU'RE BUYING" TOPIC AT TWIN CITY MEETING

A regular meeting of the Twin City Association of Purchasing Agents was held on Wednesday, March 14, at the St. Paul Athletic Club, St. Paul. Guest speaker was Bill Gove, sales department manager of the Minnesota Mining and Manufacturing Company. His subject was "So You Think You're Buying".

A non-commercial sound film, entitled "Paper and the Printing Business", was shown. The pre-meeting "huddle" featured a discussion on N.P.A. Regulation 4 giving rating to maintenance, repair and operating supplies.

1 1 1

NIGP WISCONSIN CHAPTER ELECTS DUFFY PRESIDENT

The Wisconsin Chapter, National Institute of Governmental Purchasing, held its first quarterly meeting of 1951 at Milwaukee. City Purchasing Agent J. W. Nicholson reported on a recent conference of NIGP directors with federal officials, at which the probable procedures and effects of economic controls were discussed, with particular reference to the requirements of hospitals and other public institutions.

The reappearance of escalator clauses was discussed, and the practice of billing goods at prevailing at time of shipment, usually higher than prices shown on purchase orders. The Bureau of Purchases for the State of Wisconsin is now requiring a certificate from the suppliers to the effect that invoice prices do not exceed those charged to other customers for like kind, quality, and quantity of merchandise.

Officers for 1951 were elected as follows: *President*, Joseph V. Duffy, City of Kenosha; *Secretary-Treasurer*, George S. Quinn, City of Racine. Messrs. Duffy and Quinn succeed Maurice Park of Dane County and Barney Gill, City of Madison, respectively.

1 1 1

WHAT SALESMAN EXPECTS OF P.A.—TRI-STATE ASSN.

A regular meeting of the Tri-State Purchasing Agents Association was held in the Hotel Prichard, Huntington, W. Va., on Tuesday, February 20. Guest speaker was King McKown of the McKown Sales Company, Huntington. Mr. McKown's subject was "What the Salesman Expects of the Purchasing Agent".

1 1 1

STEEL EXECUTIVE GUEST AT YOUNGSTOWN MEETING

A regular meeting of the Youngstown District Purchasing Agents Association was held on February 27, at the Youngstown Club. Guest speaker was C. Walter Holmquist, vice-president of Copperweld Steel Co., and a veteran of 40 years' service in the steel industry. Mr. Holmquist's subject was "Purchasing in Relation to Operating Departments."

(Please turn to page 242)

Why

UNBRAKO

"STANDARDS"

"Standards" keep you in the BLACK



Standard design
and purchase



Standard tools



Standard (fast) production with
"standards" from stock



Standard (or higher)
profits

"Specials" put you in the RED



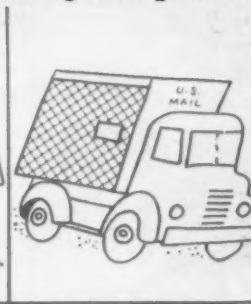
Special design



Special drawings



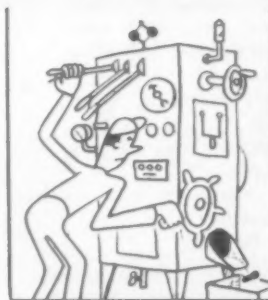
Special purchase



Special (delayed)
delivery



Special stock



Special tools



Special production



Special bookkeeping



Special costs (higher)



Special profits (lower)



Knurled
Socket Head
Cap Screw



Flat Head
Socket Cap
Screw



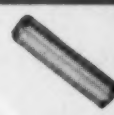
Self-Locking
Knurled
Point Socket
Set Screw



Knurled
Socket Head
Shoulder Screw



Fully-Formed
Pressure Plug



Precision-
Ground
Dowel Pin

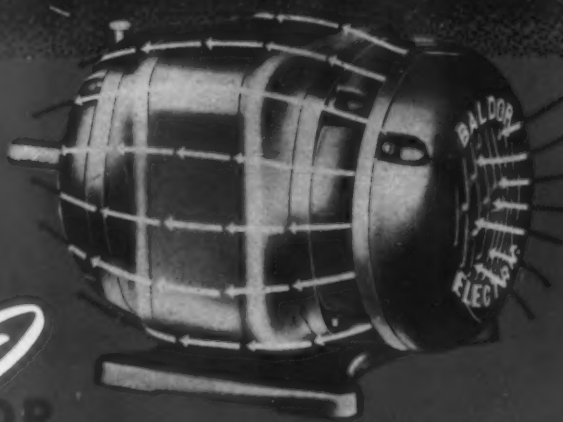
STANDARD recommends "Standards"

SPS

STANDARD PRESSED STEEL CO.

JENKINTOWN 31, PENNSYLVANIA

DON'T LET DUST, DIRT, LINT OR FUMES SHORTEN THE SERVICE LIFE OF YOUR MOTORS



BALDOR
Streamcooled **BALL-BEARING MOTORS**

These motors are **SOLIDLY ENCLOSED**, cooled by an outer-mounted fan in the bell-end. They cannot inhale dust, dirt, lint, or other contamination. There is no air passageway to clog up and cause burnout or lowered efficiency.

BALDOR Streamcooled Motors require no dismantling for cleaning. Thus **LESS SERVICING**... no interruption of production or service. Let us tell you more about these long service-life BALDOR Motors.

BALDOR ELECTRIC CO. • ST. LOUIS 10, MO.

Baldor

MOTOR SPECIALISTS FOR 30 YEARS

Baldor Motors are sold and serviced in more than 300 trade centers

PURCHASING EXPERIENCE M.P.A.C. MEETING TOPIC

A regular meeting of the Metropolitan Purchasers Assistants Club was held in the Midston House, New York, N. Y., on Tuesday, March 13. Guest speaker was Irvin Mathews, purchasing agent for Becton-Dickinson & Co., Rutherford, N. J. Mr. Mathews' subject was "Purchasing Department Experience." A forum on recent N.P.A. regulations was held.

✓ ✓ ✓

PURCHASING CURRICULUM AT UNIVERSITY OF WISCONSIN

The School of Commerce, University of Wisconsin, in cooperation with the Milwaukee Association of Purchasing Agents, has announced a four-year course in preparation for a career in purchasing, believed to be the first curriculum of its kind, specifically directed to purchasing work and leading to the degree of B.B.A. The plan provides for a wide range of recommended elective courses to provide the kind of background most valuable to the prospective purchasing executive. The program includes:

Required Courses for all Commerce Students

General Economics
Elements of Accounting
Intermediate Accounting
Business Communications
Commercial Law
Business Statistics

Required Marketing Courses in Purchasing Curriculum

Marketing Management
Advertising
Industrial Marketing
Retailing

Elective Courses (*Recommended)

One additional marketing course required from among the following:

Marketing Research
Advanced Advertising
*Price Policies
Sales Forecasting
*Public Relations

Five elective courses to be chosen from among the following:

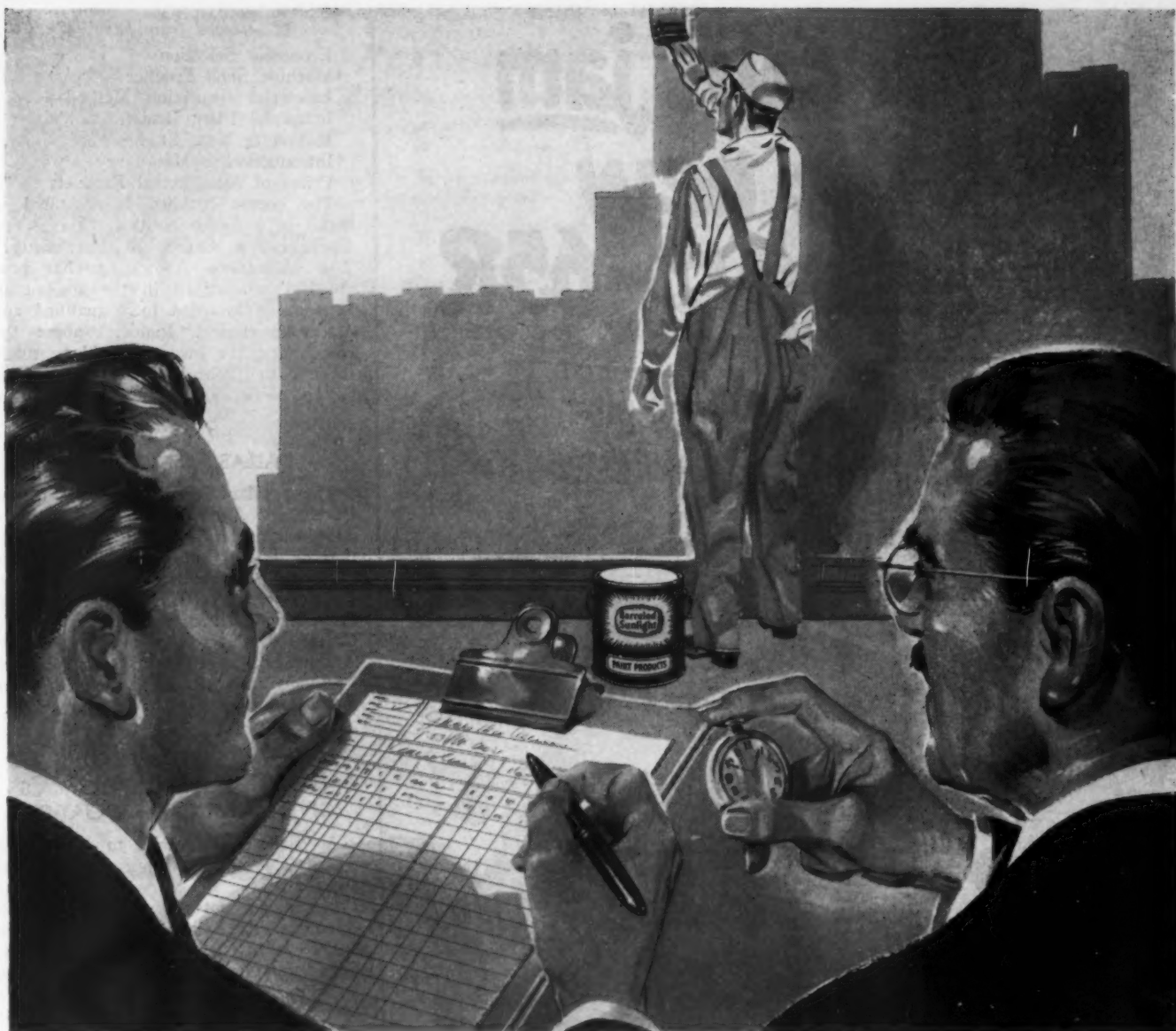
Money and Banking
*Industrial Management
*Marketing Methods
*Corporation Finance
*Principles of Insurance
Public Utilities

*Personnel Management
Urban Land Economics

Related courses (elective) in the School of Commerce, Civil Engineering, Mechanical Engineering, Mining and Metallurgy, Agricultural Economics:

*Commercial Law
Production Planning & Control
*Industrial Statistics (Quality Control)
*Office Procedures
*Industrial Policies, Training & Service Programs
Cost Accounting
*Contracts & Specifications
Estimates

(Please turn to page 244)



Have You Ever Made THIS Time Study?

Never forget this most important fact: the biggest element in your maintenance painting costs is the *time* element. Because time represents man hours . . . labor . . . and labor counts for at least *eighty percent* of the cost of any painting job.

That's why we recommend this simple test. Take a gallon of "Barreled Sunlight" and a gallon of any other brand you may now be using. Thin both according to directions and apply under identical conditions. Then compare . . . *not* by price per gallon but by the amounts of paint "ready for the brush" after thinning, the appearance of the finished job and — most important of all — the time it takes to cover the same amount of surface.

Smart maintenance men the country over who have made this simple "time study" have discovered that the real yardstick of painting costs is not price per gallon but the *applied cost per square yard* for both materials and labor. And on that basis, they've learned for themselves that "Barreled Sunlight" delivers a better-looking,

longer-lasting job at lower cost than any other paint. Our representative will be pleased to arrange one of these tests for you — right in your own plant and at your convenience. Write — and he'll call.



BARRELED SUNLIGHT PAINT CO.
18-D Dudley St., Providence, R. I.

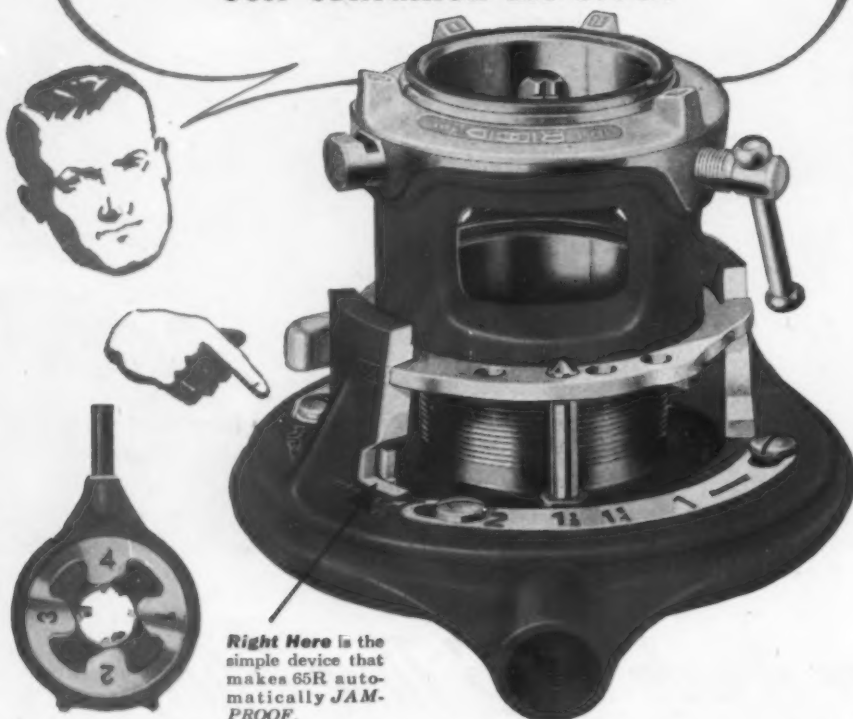
Barreled Sunlight *Paints*

In whitest white or clean, clear, pleasing colors,
there's a Barreled Sunlight Paint for every job

IT ALWAYS COSTS MORE NOT TO PAINT!

You can't jam the new **RIDGID 65R**

Really streamlined pipe
threading with this **RIDGID**
self-contained die stock



Right Here is the
simple device that
makes 65R auto-
matically JAM-
PROOF.

● You don't have to watch it—lead screw can't jam on workholder. New jam-proof drive plate automatically kicks out driving ratchet pawl when standard length thread is cut. Your recent model 65R easily converted—just buy new drive plate, put in place of old plate. Perfect threads on 1" to 2" pipe with one set of 4 high-speed steel dies—sets to pipe size in 10 seconds, mistake-proof self-centering workholder sets instantly! Buy the new jam-proof **RIDGID 65R** at your Supply House.

RIDGID

★ **Work-Saver Pipe Tools** ★

THE RIDGE TOOL CO. - ELYRIA, OHIO

(Continued from page 242)

Economic Selection
*Machine Shop Practice
Industrial Inspection Methods
Industrial Plant Design
Motion & Time Studies
*Introduction to Metallurgy
Prices of Agricultural Products

The course outlined is presented in detail in a folder entitled, "Have You Considered a Career in Purchasing?" The Milwaukee Association has provided a scholarship in the amount of \$250 to be awarded to a qualified and deserving student. Inquiries about the course and the award should be made through the School of Commerce, University of Wisconsin, Madison, Wisconsin.

1 1 1

DALLAS ASSN. MEETING

The regular February meeting of the Purchasing Agents Association featured an educational program under the direction of J. A. Collins, chairman of the educational committee. Speakers and subjects were: W. E. Herring, Highland Park Schools, "Institutional Purchasing"; C. H. Haggard, County of Dallas, "County Purchasing and Its Related Problems"; and R. E. F. Schmid, "The Dual Purchase Order for Supply Use".

1 1 1

SALESMAN'S ADVICE TO P.A.S GIVEN AT B.C. ASSOCIATION

A "Salesman's Advice to Purchasing Agents" was the title of the principal address at the February meeting of the Purchasing Agents Association of British Columbia. The talk was given by F. R. Barnsley of the supply department, Canadian General Electric Company, Vancouver. Highlights of Mr. Barnsley's advice: don't be mean; don't keep salesmen waiting unnecessarily; be friendly, frank and honest; above all, be a gentleman.

A special guest was Stan Ringheim, vice-president for District 1, N.A.P.A. He gave the local association a description of the proceedings of the executive council meeting held at Niagara Falls, Ontario, earlier in the month. Geoff. Haszard, national director, spoke about his recent visit to the Calgary and Edmonton associations, accompanied by President Bill Penny and Victoria President Ned Williams.

New members of the association introduced include: Herb Dodd, Rickett-Sewell Electric Ltd., Chas. Mitchell, Empire Brass Mfg. Co., Ltd.; Bill Wells, Jones Tent & Awning, Ltd.

1 1 1

FT. WORTH ASSN. SEES FILM

A regular meeting of the Purchasing Agents Association of Fort Worth was held on Tuesday, February 20, at the Worth Hotel. H. D. Thornton was in charge of the program, and presented a film entitled "A New Frontier". The picture deals with oil production in Arabia.

(Please turn to page 246)

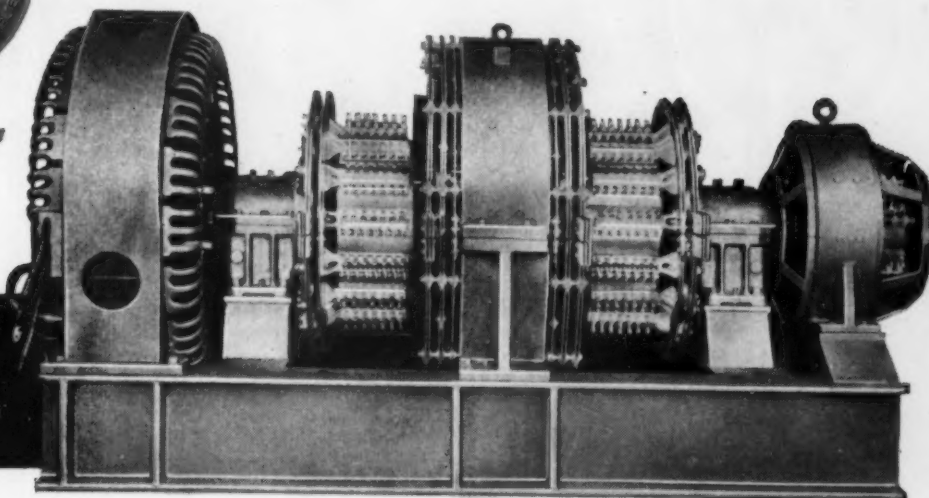


PLATEMANSHIP

H-VW-M's unique combination of:

- ... the most modern and complete laboratory for testing and development
- ... ability to provide complete equipment and materials for every plating and polishing need
- ... the complete background of knowledge and experience in every aspect of plating and polishing.

**Only H-VW-M
PLATEMANSHIP**



brings you so many advantages in low-voltage generators

- ... Brush holders are one piece bronze castings, completely insulated from the electrical circuit; end supported from the bearing pedestal for easy inspection of brushes and commutator
- ... Special copper graphite brushes insure long life and high conductivity
- ... Moulded-in "Equaload" shunts reduce resistance, eliminate selective action, equalize current distribution
- ... Commutator and field coils are properly ventilated by fan action of commutator risers
- ... Rolled steel ring in frame reduces vibration
- ... Long, trouble-free life is assured by oversize sleeve-type bearings

These are the reasons why H-VW-M low-voltage Generators are widely used for electroplating, anodizing, electrotyping, producing electrolytic chemicals and metal refining. They are available in a complete range from 200 to 25,000 amperes and in standard voltage ratings of from 6 through 60. For special applications H-VW-M can design and build motor generator sets to meet any low-voltage requirement and condition.

Each H-VW-M Generator embodies all the refinements developed through three-quarters of a century of building generators for the plating and polishing industry. They fully reflect H-VW-M *Platemanship*—the ability to meet and even anticipate every need of industry in every phase of pickling, polishing, buffing, cleaning, anodizing and plating.

For full details ask for Bulletin G-102.

HANSON-VAN WINKLE-MUNNING COMPANY, MATAWAN, NEW JERSEY
PLANTS AT: MATAWAN, N. J. • ANDERSON, INDIANA • SALES OFFICES: ANDERSON • CHICAGO • CLEVELAND
DAYTON • DETROIT • GRAND RAPIDS • MATAWAN • MILWAUKEE • NEW HAVEN • NEW YORK
PHILADELPHIA • PITTSBURGH • ROCHESTER • SPRINGFIELD (MASS.) • STRATFORD (CONN.) • UTICA

H·VW·M

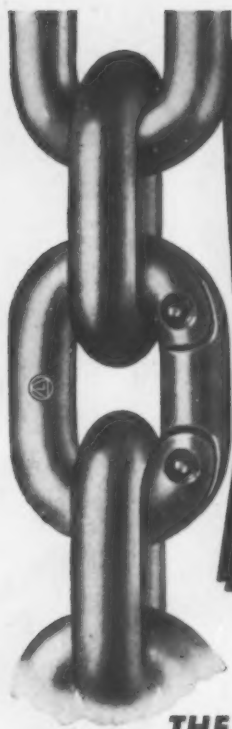
57 7620

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

APRIL, 1951

Please mention *PURCHASING Magazine* when writing to advertisers.

245



- LOCKS ON IN A JIFFY
- COSTS LESS THAN WELDING
- IS SAFER THAN COLD-SHUTTING



and...

THE LAUGHLIN "MISSING LINK" WITH INTERLOCKING SAFETY LUGS

Makes Your Chain Stronger Than Ever!

To attach a "Missing Link" you simply insert the halves through the links to be joined, fit the rivets into the rivet holes, then peen the rivets to fill the countersunk holes. And once on, the pressure-matched *interlocking lugs* take all the load — with no strain on the rivets.

Add the fact that drop-forged, heat-treated "Missing Links" are *made* stronger than proof coil chain to begin with, and you'll see why these time- and money-saving repair links give you a stronger, safer chain

than you ever had before! . . . Laughlin "Missing Links" are available in all sizes from 3/16" to 1 1/8" at your mine, mill or oil field supply house.

Free! Catalog-Data Book

Tells you how to select the *right* wire rope and chain fitting for every job. Complete specifications—helpful tables. Use the coupon below.



SEND IN TODAY
... no cost or obligation

*Reg. U.S. Pat. Off.

THE THOMAS LAUGHLIN COMPANY
44 Fore St., Portland 6, Maine

Please send Catalog-Data Book #150 to:

Name.....Position.....

Company.....

Street.....

City.....Zone.....State.....

LAUGHLIN



THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS



CAROLINAS-VIRGINIA ASSN. HOLDS SPRING MEETING

The annual spring meeting of the Carolinas-Virginia Purchasing Agents Association was held at The Poinsett Hotel, Greenville, S. C., on March 16 and 17.

The opening session on Friday, March 16, was a closed meeting, with C. L. Wyrick, association president, presiding. After official business had been conducted, S. A. Belcher, Jr., purchasing agent for M. Lowenstein & Son, Inc., discussed "Paper".

The closed forum panel, later that afternoon, with Jack T. Holt presiding, featured the following speakers and subjects: Harold Dry, paper and containers; C. R. McDonald, utilities; J. C. Johnson, textiles; Robert King, governmental and institutional; T. A. Hunter, mill supplies; H. D. Waters, fuel; R. A. McCuiston, furniture and lumber; W. E. Prescott, purchasing policies.

The evening banquet was preceded by a social hour, arranged by R. E. Bell, chairman of the entertainment committee. The banquet address was given by Hon. G. Heyward Mahon, Jr., former U. S. representative from the Fourth Congressional District, South Carolina.

A short closed business meeting was held on Saturday morning. It was followed by an open meeting in the form of a visit to Lee Electric Generating Station of Duke Power Company. Presiding officer was R. V. Spangler, chairman of the educational committee.

Dates of other association meetings for the rest of the year are as follows: June 29 and 30, at the Homestead, Hot Springs, Va.; September 14 and 15 at the Sedgefield Inn, Greensboro, N. C.; November 30 and December 1, at the Carolina Hotel, Pinehurst, N. C.

RENARD GUEST SPEAKER AT NEW ENGLAND MEETING

A regular meeting of the New England Purchasing Agents Association was held at the Hotel Vendome, Boston, on Monday, March 12. Guest speaker was George A. Renard, secretary-treasurer of the National Association of Purchasing Agents. Mr Renard's subject was "From One P.A. to Another."

The afternoon forum session was conducted by Professor Edward C. Bursk, Harvard Graduate School of Business Administration. Priorities and related subjects of importance to purchasing were discussed.

PHILADELPHIA ASSOCIATION HOLDS "MARCH" MEETING

The Annual "March" Meeting of the Purchasing Agents Association of Philadelphia was held on Thursday, March 8, at the Bellevue-Stratford Hotel. The principal address was made by Clayton Rand, editor, author, speaker and columnist. Mr. Rand's subject was "It's Nearer Than You Think."

(Please turn to page 250)



RESINIZED METALITE® CLOTH BELTS

Piece after piece of these auto grills goes through in jig time, with flash marks removed, all ready for the plating operation. The muscles in the arm of the operator show he's shoving the work hard against the belt, with complete assurance of freedom from scratches, wild grain marks, or undue heating. The resinized bond, in itself immune to heat, also prevents excess heat by holding the electro-coated abrasive grains up to their work so they cut — not rub — and generate a minimum of heat, most of which is dissipated in the long belt travel from the contact wheel to the idler pulley and back to the point of contact.

The right METALITE belts and contact wheel can put your finishing operations at a new high for speed and profit. Check with BEHR-MANNING Field Engineers — they'll recommend the right method and prove its excellence in a demonstration. Write us now.

THE LATEST IN BELT FINISHING

Get your copy of this Belt Finishing Brochure. It's full of the newest ideas and data to cut finishing costs. Mail the coupon.



BEHR-MANNING

TROY, N. Y.

Use **NORTON** abrasives Sharpening Stones

BEHR-MANNING, Troy, N. Y., Dept. P-4

Please send me your Belt Finishing Brochure.

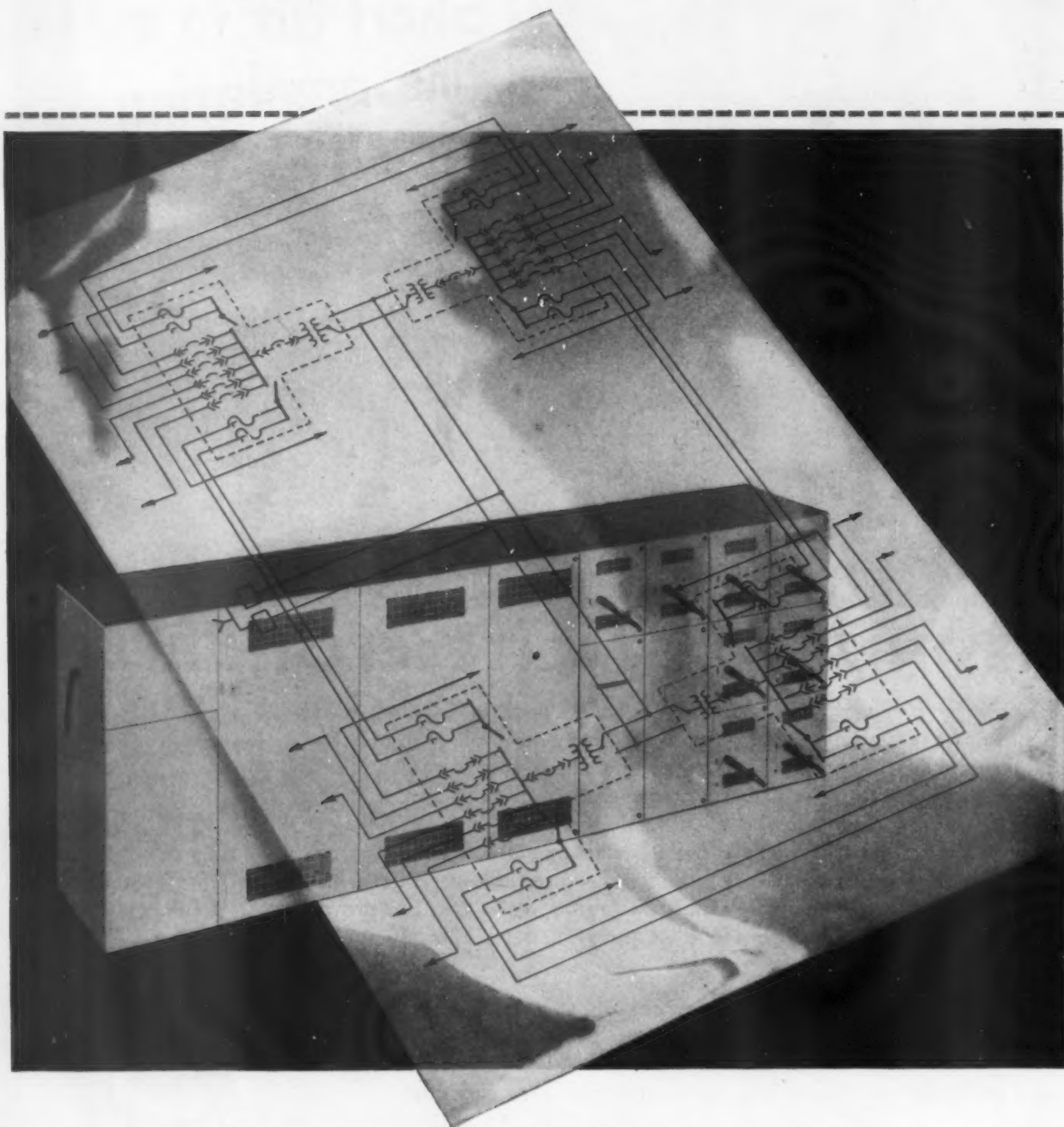
Name.....Title.....

Company.....

Street.....County.....

City.....Zone.....State.....

YOU CAN BE **SURE**.. IF IT'S
Westinghouse



PRIMARY SELECTIVE NETWORK SYSTEM

This modern distribution system provides maximum flexibility to meet changing load conditions. It provides very reliable service with very good regulation and efficiency. By sacrificing these characteristics to some degree it is possible to use other systems whose initial investment is less. To evaluate the system most desirable for your plant, consult your Westinghouse Representative.



Here's some information
you'll find useful when
purchasing electrical
products and services.

J.D.

Visualize

your power problem this way

Any old way of running wires to your equipment may work . . . but what about efficient, profitable operation?

A modern electrical distribution system can make electrical power do more of *your kind* of work. But again, just any of the modern systems won't do, because there is no all-purpose system to balance all factors. *That's why it's imperative that your system be planned to meet your specific needs.*

Power centers provide the simplest way—the low-cost way—of attaining the system you require.

Westinghouse Indoor Dry-Type Power Centers give you these advantages:

THEY'RE MORE ECONOMICAL—because they eliminate the need for costly vaults and can be located near center of load . . . resulting in shorter secondaries, lower line losses, better regulation.

THEY COST LESS TO MAINTAIN—no liquids to test, recondition or replace . . . no gaskets, valves or gauges. All parts are readily accessible.

THEY'RE SAFER—fire and explosion-proof, they have no exposed live parts. Each breaker is enclosed in an individual compartment. Positive interlocking prevents false breaker operation.

Your Westinghouse Representative will be glad to discuss your system problems with you. He is prepared to offer complete system information, with advantages of each carefully weighed.

Ask him for Booklet B-4045, "Industrial Power Distribution Systems" and B-4162, "Power Centers by Westinghouse". Or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-92000

Westinghouse
POWER CENTERS



SHENANGO*Centrifugal*
CASTINGS**... KEY TO SAVINGS**

Typical of some of the larger parts cast centrifugally and precisely finished at Shenango, this is a 45" cylinder bushing for use in a big hydraulic metal forming press.

CENTRIFUGALLY CAST BY SHENANGO . . . for a longer life under pressure

THERE'S a way to save important money on symmetrical parts subjected to high pressures and stresses. You can do as so many companies do—turn to Shenango for *centrifugally* cast parts or assemblies . . . large or small . . . ferrous or non-ferrous . . . semi-machined or precisely finished to specifications.

At the modern Shenango works you'll gain by the most advanced techniques in centrifugal casting. Metal for metal you get greater

strength and better resistance to wear or abrasion, to say nothing of relief from sand inclusions, blow holes and other often hidden defects.

GET ALL THE FACTS on Shenango time-and-money-saving service and qualities. Send for Bulletin No. 150 on non-ferrous parts; Bulletin No. 151 covering parts of Meehanite Metal, Ni-Resist and special alloy irons.

SHENANGO-PENN MOLD COMPANY
2490 West Third St. • Dover, Ohio
Executive Offices: Pittsburgh, Pa.

SHENANGO

ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE METAL

RHODE ISLAND ASSOCIATION MEETING DISCUSSES PAPER

A special program on "Paper" was featured at the February meeting of the Rhode Island Purchasing Agents Association. The meeting was held in the Narragansett Hotel, Providence.

Chester H. Childs, technical director of the Merrimac Paper Company, manufacturers of cable insulated paper and specialized industrial kraft papers, discussed coarse papers. Discussion of fine papers was handled by Norman I. Bearer, vice-president of the Champion International Paper Company, Lawrence, Mass., manufacturers of high quality book and magazine coated stock.

A film entitled "The Gift of Ts'ai Lun—Paper", prepared by the Hammermill Paper Company, was shown as part of the program.

1 1 1

ROCHESTER ASSOCIATION SEES DIE CASTING DISPLAY, FILM

A regular meeting of the Purchasing Agents Association of Rochester was held in the Rochester Club on February 28. Feature of the evening program was a program on die casting that included a display of parts and a film on the subject. Both were presented by the Doehler-Jarvis Corporation.

M. Barker discussed the commodity charts. Sidney Divinsky gave a "thumb-nail sketch" of the John P. Smith Company.

"Priorities and Allocations" was the subject discussed at the afternoon round table session.

1 1 1

"ECONOMIC PROBLEMS OF '51" CHICAGO ASSOCIATION TOPIC

A regular meeting of the Purchasing Agents Association of Chicago was held on Thursday evening, March 8, at the Hotel Sherman. Guest speaker was Herbert N. McGill, president of the McGill Commodity Service, Inc., and consulting economist to the National Association of Purchasing Agents for the past 23 years. Mr. McGill's subject was "Economic Problems of 1951".

1 1 1

CENTRAL MICHIGAN GROUP HAS ACTIVE PROGRAM

The educational committee of the Central Michigan Association of Purchasing Agents reports that the program put on by Stan Brien and his State Purchasing Group has proved very popular, with requests for its presentation continuing. The group appeared in February before the municipal government in Ann Arbor, and was scheduled to give its demonstration in March to the Kalamazoo Purchasing Agents Association.

New members of the Central Michigan Association include: Stanley E. Bryan, Michigan State College; Alfred A. Beuerle, Capitol Bedding Company; Harry L. VanKuren, Lansing Drop Forge Company; Elmer J. Shapiro, Universal Steel Company of Michigan.

(Please turn to page 252)



PROPERTY PROTECTION

An Emergency Measure Anytime



ONLY
FENCE IS MADE
OF **KONIK** STEEL

The copper, nickel and chromium in KONIK steel give this fence fabric strength and long life. Galvanizing the KONIK fabric *after weaving* gives it even greater protection against rust and corrosion. Only Continental fence is made of KONIK steel.



Every Continental fence installation is planned by our fence engineers—tailored to fit and harmonize with the property it protects.



Experienced engineers plan and help erect Continental fence. They work with you, laying out the most effective protection installation.

● The need for controlling entrance and exit to and from industrial and institutional property is a protection emergency any time. One unnecessary loss or accident may cost much more than a complete fence installation. Today, added fire and theft protection is more urgent than ever. These and other fencing advantages can pay off in lower insurance rates . . . through reduced guard costs. And, long-lasting Continental KONIK fence pays off too in lower cost per year of fence life. Make sure your emergency protection is adequate and reasonably permanent . . . make sure it's Continental KONIK.



WE'LL SEND YOU THIS FREE FENCE MANUAL

A card will bring your copy of "Planned Protection"—a modern manual on protection and control of property. Write Continental at Kokomo or contact our nearest sales office.

*Trade Marks Reg. U. S. Pat. Off.

*Due to present National Defense requirements for nickel and chromium, two critical war materials, Continental Fence will not be available in "Konik" steel for the duration of this emergency.



CONTINENTAL STEEL CORPORATION

GENERAL OFFICES • KOKOMO, INDIANA

PRODUCERS OF Manufacturer's Wire in many sizes, shapes, tempers and finishes, including Galvanized,

KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, Lead Coated, and special wire.

ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.

For better performance

DISSTON[®]

CUSTOM STEEL PARTS

DISSTON U.S.A.

Made to your blueprint requirements from

DISSTON SPECIFICATION STEELS

Intricate designs... exacting tolerances... special heat treating... odd shapes and unusual sizes—you can get them made better—at less cost—by Disston!

Disston Custom Steel Parts are any replaceable heat-treated products which are made from flat steel, hardened, tempered, and machined. Disston facilities include those for grinding plates up to 100" long, 65" wide; circular work from $\frac{1}{16}$ " diameter to 72" diameter.



HENRY DISSTON & SONS, INC.
433 Tacony, Philadelphia 35, Pa., U.S.A.
Canadian Factory: Toronto 3, Ont.



In peace waste is a sin...
NOW—waste is a crime!

VALUABLE BOOKLET

on Disston Custom Steel Parts shows how to save on vital parts and materials; how to improve performance of machines and products; tells how to specify and order for most economical purchasing. A "must" reference book for the designer, engineer, purchasing agent. Sent free without obligation. Write on your letterhead or use coupon!

NAME _____
ADDRESS _____
CITY _____
ZONE _____ STATE _____
COMPANY _____

YALE PROFESSOR SPEAKS AT CONNECTICUT MEETING

Professor Henri Peyre of Yale University was guest speaker at the February 27 meeting of the Connecticut Purchasing Agents Association, held in Cheshire. Professor Peyre said that Western Europeans have difficulty in understanding Americans, and the conduct of U. S. citizens abroad has a good deal to do with that misunderstanding. He declared that American visitors seem to think they have to prove they are from "the grass roots" and "act like farmers." They make a point of looking as though they are not intelligent, he said.

The pre-meeting forum was conducted by Thomas Daley, featuring "What the P.A. Should Know About Traffic." Guest speakers were Erwin Tuthill of the Manufacturers' Association of Connecticut and John B. Holton of American Airlines.

1 1 1

DALLAS ASSOCIATION SEES COLOR FILM ON PIPE

A regular meeting of the Purchasing Agents Association of Dallas was held in the Melrose Hotel on Thursday, March. The Continental Supply Company presented a sound color film entitled "Ore Mine to Oil Fields". It shows the manufacture of Youngstown pipe from the ore mine to the finished product. Bill Gottschall, manager of tubular sales for Continental, supervised the showing.

1 1 1

COMMERCE DEPT. EXPERT NEW ORLEANS ASSN. GUEST

A regular monthly dinner meeting of the Purchasing Agents Association of New Orleans was held at the St. Charles Hotel on Monday, March 12. Guest speaker was Wren W. Anderson, business specialist, U. S. Department of Commerce. Mr. Anderson's subject was "Inventory Control and Priorities."

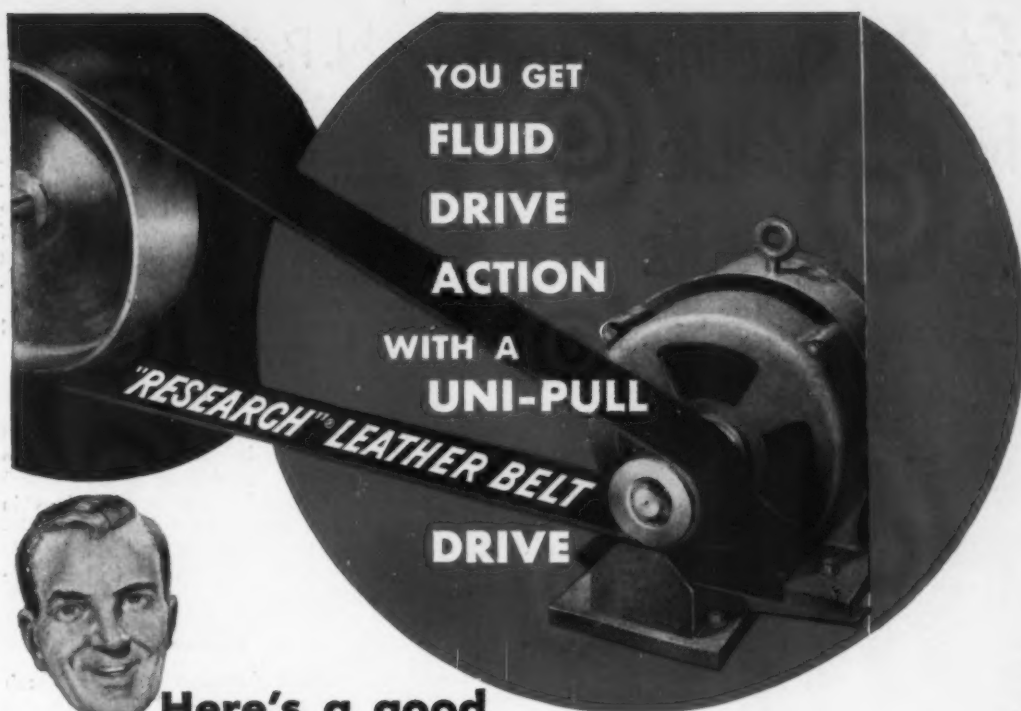
1 1 1

GOVT. OFFICIALS GUESTS AT CENTRAL IOWA MEETING

Guests at the February meeting of the Central Iowa Purchasing Agents Association, included Al Loveland, acting director of Office of Price Stabilization, and Maurice O'Reilly, administrative officer of O.P.S. The meeting was held in Des Moines.

The Government officials were given a knowledge of the problems faced by purchasing men from the forum featured at the meeting. The forum covered government regulations, with the following participating: Murray Nelson, assistant secretary of the Maytag Company; Ray Rollins, Maytag Company, and Wayne Summy, Solar Aircraft Company. A lively discussion followed this presentation of interpretation of regulations and methods of complying with them.

New members are: Joe Troust, Fort Dodge Creamery; Robert D. Vandenberg, General Mills, Inc.; H. I. Snodgrass, Solar Aircraft Company.



Here's a good
example of Graton & Knight

Engineered Flat Leather Belting available through Industrial Distributors

Success of your short center pivoted motor base drives depends on the FLUID DRIVE ACTION of the belts you use. They should possess these five quality features:

1. *High Coefficient of Friction* — to grip across and around the pulleys.
2. *Flexibility* — to withstand continuous flexing on short centers over small diameter pulleys.
3. *Resiliency*—to absorb starting torque and load shock.
4. *Minimum Permanent Stretch* — to maintain correct tension at all times.
5. *Great Tensile Strength* — to carry peak loads.

These five quality features describe RESEARCH, the premium quality flat leather belt made by a special process

to give you FLUID DRIVE ACTION on Uni-Pull and other important drives. It is one example of G&K Leather Belting engineered to give more production-power.

Other famous G&K brands, developed through a century of service to industry, include HEART OAK, a rugged, firm belt for shifters and step-cone pulleys; and SPARTAN,® a combination tan resistant to oil, steam, acid and alkali fumes . . .

Let the G&K man help you "drive it better with leather."

GRATON & KNIGHT COMPANY
Worcester, Massachusetts

To assist you in engineering a short center drive, be sure to get a free copy of the new Uni-Pull Drive Manual. Write for it on your letterhead.

Production men are showing increasing interest in the flat leather belt for short center pivoted motor base drives. It pulls as a unit, across and around the pulleys, and delivers more production-power with less wear and tear on machines and bearings.

Advertisements like the one at the left feature Graton & Knight Engineered Leather Belting and are being read by production men in many of the best belting markets.

Here's the list:

Industrial Distribution	March
Purchasing	April
Factory Management & Maintenance	March
Mill & Factory	February
American Miller & Processor	February
Textile World	February
American Wool and Cotton Reporter	March 15
Fibre & Fabric	February 24
Paper Industry	March
Paper Mill News	March 24



***Engineered LEATHER BELTING**

Plan for Satisfaction!

Specify the dependable new G-E Water Cooler, it's

SATISFYING

Water stream is solid and properly angled to provide a full, satisfying drink. No squirt, no splash.

HANDSOME

The all-new styling with its sleek lines, the cool-green wrinkle finish, the soft lustre of a stainless-steel or the gleaming white of a porcelain top—blend ideally with modern surroundings.

CONVENIENT

The sure-tread foot pedal control permits drinking when hands are full. Easily operated by the daintiest foot, yet sturdy enough to withstand abuse.

ECONOMICAL

Average cost of operating is less than three cents a day.



SANITARY

Top is scientifically designed to avoid splash—no corners or crevices to catch dirt. Sturdy, streamlined bubbler guard prevents lips from touching nozzle.

DEPENDABLE

The hermetically sealed refrigerant system is produced with the engineering skill and design experience that come from more than 25 years in refrigeration research and manufacture.

COMPACT—EASILY INSTALLED

A G-E Water Cooler takes less floor space than an ordinary office chair. May be readily located at spots most convenient for use.



Water Coolers

WATER AT WORK...CAN SAVE YOU MONEY!

Cool, convenient, sanitary drinking water makes your payroll dollar worth more by improving employee efficiency and morale... increases sales by building customer goodwill.



ASK your local G-E dealer for advice on your water cooler requirements. Look for his name in the classified pages of your telephone book.

FREE!
24-PAGE BOOK!

General Electric Company, Section P-5
Air Conditioning Department, Bloomfield, New Jersey

Please send without obligation to me the fully illustrated book, "Water at Work."

NAME.....

COMPANY.....

ADDRESS.....

CITY.....ZONE.....STATE.....

You can put your confidence in—

GENERAL ELECTRIC

N. P. A. Orders

Construction Machinery

Order M-43 limits requirements of individual producers of construction machinery and equipment for accepting defense rated orders monthly to 50% of the average monthly shipments during the 6-month period ending June 30, 1950, unless otherwise directed by NPA. Producers are also permitted a 45-day lead time for delivery on rated orders.

Tin

Amendment to Order M-25 permits use of tin cans in packing some products not previously permitted. It also makes minor changes in plate specifications in a few instances, to provide more satisfactory cans for certain products. Details available from Department of Commerce field offices.

Rubber

Order M-2, Amended effective March 1, provides that rubber manufacturers may use 95% as much total new rubber 48% as much dry natural rubber per month as they used in the average month of the year ending June 30, 1950, subject to adjustments of the base period. Manufacturers using natural rubber latex will be permitted 114% of their adjusted base period consumption.

Civilian rubber consumption January and February averaged 88,500 long tons. It is expected to be approximately 90,000 long tons for each month in the second quarter. The increase is possible because of increasing production of synthetic rubber, which will more than make up for a reduction in civilian consumption of natural rubber, including latex, from 35,000 long tons in January and February to 30,000 long tons in March. Saving 5,000 long tons of natural rubber a month for the defense program will be accomplished by limiting natural rubber content of rubber products. Little, if any, change is expected in the wearability, performance, appearance or safety of any affected product.

Melamine-Containing Products

Amendment to Order M-32 provides that the sole producer of melamine-containing products will not be required to accept rated orders less than 15 days before the beginning of the month in which delivery is requested. This is to prevent disruption of production schedules for both defense and civilian orders. Melamine is produced from cyanamide and is used in the manufacture of plastics and in organic synthesis.

Steel Plates

Amendment to Order M-1 regulating the scheduling of rated orders for steel, sets requirements for acceptance of DO-rated orders for carbon and alloy plates at 20% of average monthly shipments beginning in May. Previous ceiling was 15%.

(Please turn to page 256)



DOING THE BEST WITH A

"Tight Squeeze All Around!"

Supplying unprecedented customer demands in the face of many raw material shortages is today's big challenge to the Chemical Industry. A "tight squeeze" is being felt all around, and each producer is working hard to overcome his particular part of the problem.

In the field of heavy chemicals, for example, lack of sulfur has meant curtailments in production of Sulfuric Acid and other important industrial chemicals made from it. As a major producer, General Chemical is using every possible tool to make increased tonnages available. Equipment is being converted to the use of sulfur-bearing ores, gases, and other alternate raw materials—all with the view to serving customers as efficiently as possible.

And this is but one of the problems that must be met by General—and by the Industry as a whole.

They will, too!

The same hard-driving effort, the ingenuity, and the close teamwork that have whipped so many tough problems in the past will do so again.

You can count on it!



GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 RECTOR STREET, NEW YORK 6, N. Y.

OFFICES IN MAJOR INDUSTRIAL CENTERS FROM COAST TO COAST



THE ART OF MAKING GLASS

CAN YOU USE GLASS—instead of METAL?

If you are faced with the problem of finding a replacement for the metal used in your product, GLASS may prove a *practical and workable* substitute.

INDIANA'S SERVICE INCLUDES:
ESTIMATING • MODELLING
DESIGNING • MOULD ENGINEERING
HAND AND MACHINE PRODUCTION

Let us hear from you if there is a chance that GLASS might fit into your scheme of things. Inquiries will receive prompt attention.

INDIANA GLASS COMPANY
ESTABLISHED 1907
DUNKIRK, INDIANA



Nickel

Amendment 3 to NPA Order M-14, permits manufacturers who have inventories of nickel, stainless steel or high nickel alloys on hand to continue the manufacture of items which previously were not to be produced after March 1, provided that the inventories are not suitable for use by them in the manufacture of other more essential items. The amendment also permits the use of inventories of nickel products which were included in producers' schedules of February, as well as supplies in processors' inventories, if they are delivered before June 1.

Barium Carbonate

Amendment to Order M-32 provides that no producers of barium carbonate will be required to accept defense orders for more than 20% of any month's scheduled output.

Machine Tools

Order M-40 sets up a system of "pool orders" under which the General Services Administration will place firm orders with manufacturers of machine tools, so they can fit these machines into their production schedules without further delay. Order M-41 sets up a system for regulating the delivery of the machine tools that are produced under the "pool orders" system to make sure that they are distributed where they will be of most benefit in the defense program. Seventy per cent of the machine tools produced are to be made available to the various branches of the armed services or to prime or sub-contractors of the armed services.

Cattlehides, Calfskins

Allocations of cattlehides, calfskins, and kips are based on 90% of the estimated current supply. The remaining 10% will be used to supply firms who either have not yet filed the necessary forms with N.P.A. to receive allocations, or who have filed inadequate data for determining allocations. Each tanner or contractor authorized under provisions of N.P.A. Order M-35 to purchase hides or skins will be permitted to buy a percentage of hides or skins in proportion to the total number he put in process in 1950, including imports.

N.P.A. News

Chemicals Used In Petroleum Industry

NPA Delegation 9 delegates to the Secretary of the Interior authority over the production and distribution of industrial chemicals used principally in the petroleum industry. Chemicals involved are: tetraethyl lead fluid petroleum cracking catalysts, special inhibitors used in gasoline, lubricating oil additives, and fluids and additives made especially for oil and gas drilling and demulsifiers.

(Please turn to page 258)

test proves that *Better Wearing Qualities*

give you

42%

MORE HOLES PER GRIND

It was a smooth-running job—drilling $\frac{1}{2}$ " holes in a cast iron cover, $\frac{1}{2}$ " thick—but the superintendent wasn't satisfied with the wearing qualities of the high speed drills that were being used. They averaged 2705 holes per grind. ♦ When a *Cleveland* Service Representative was called in, he recommended a stock CLE-FORGE High Speed Drill that is engineered to reduce the wear caused by abrasive action. With no change in feed or speed, this drill averaged 3862 holes per grind! ♦ On all drilling operations, a *Cleveland* Service Representative can help you *speed the job* and *cut costs*. Contact our nearest Stockroom, or ...

Telephone Your Industrial Supply Distributor

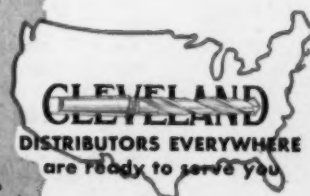
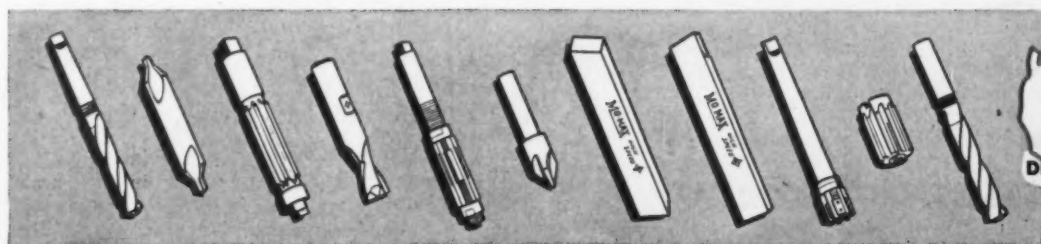
THE CLEVELAND TWIST DRILL CO.

1242 East 49th Street

Cleveland 14, Ohio

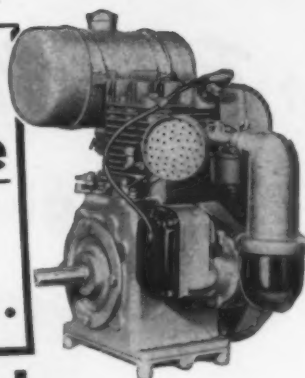
Stockrooms: New York 7 • Detroit 2 • Chicago 6 • Dallas 1 • San Francisco 5

Los Angeles 58 • London W. 3, England



ASK YOUR INDUSTRIAL SUPPLY DISTRIBUTOR FOR THESE AND OTHER *Cleveland* TOOLS

Gain More Power Advantage for Your 3 to 6 hp. Units...



Presented here are a few of the basic facts why Wisconsin Heavy-Duty Air-Cooled Engines offer important advantages to the designing engineer, equipment manufacturer and the ultimate user:

1. Rotary type high tension magneto, with impulse coupling, mounted on outside of engine . . . operates as an entirely independent unit that can be serviced or replaced in a few minutes.

2. Self-cleaning tapered roller bearings at both ends of the crankshaft . . . will withstand side-pull or end-thrust without danger to bearings.

3. Maximum torque at usable speeds . . . most desirable on equipment that really has to go to work.

Our Engineering Department will be glad to co-operate with you in adapting Wisconsin Engines to your requirements. Write for detailed data.

Condensed Specifications 4-Cycle Single Cylinder

Engines	Model ABN	Model AKN
Bore.....	2 1/2"	2 7/8"
Stroke.....	2 3/4"	2 3/4"
Piston Displ. (Cu. In.).....	13.5	17.8
HORSEPOWER		
1800 R.P.M.....	2.5	3.6
2200 R.P.M.....	3.1	4.5
2600 R.P.M.....	3.7	5.3
3000 R.P.M.....	4.2	5.9
3600 R.P.M.....	4.6	6.2
No. of Piston Rings.....	4	
Fuel Tank Cap.....	1 Gal.	
Weight, lbs.....	Net	Crated
Standard Engine.....	76	89



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN



THROW IT AWAY!

... when it's empty of course!

The new Fairway "Crystal" costs you so little that a new unit is more economical than refilling! Comes filled with 500 Enteric Coated salt tablets—sealed at the factory for your protection! Simple to use—easily installed!

Write Today For StaSafe Bulletin No. 517

Standard Safety Equipment Company

232 West Ontario Street, Chicago 10, Ill.

(Continued from page 254)

Napthenic Acid

Some manufacturers now are overloaded with DO orders which demand a specific grade of acid, resulting in reduced supplies for non-rated, but essential industries. They have recommended that NPA allocate the chemical on an end-use basis at the supplier level and equitably distribute defense orders. NPA said that a general chemical allocation order, now being considered, would regulate distribution.

Burlap

The Industry Advisory Committee and officials of NPA are agreed that controls on use of burlap are necessary at this time, but the textile bag industry suggested exploring possibility of making more cotton available to take up the slack created by the shortage of burlap. This country had been consuming approximately 70 million yards of burlap a month, but present imports are down to approximately 40 to 50 million yards a month. Burlap industry members suggested NPA make an inventory of burlap supplies by requiring all holders of the material to register quantities on hand.

Blueprint and Sensitized Paper

Warning that bottlenecks in defense work may develop because contractors cannot obtain adequate supplies of blueprint and other sensitized papers, the industry has asked N.P.A. to take action to insure supplies. Demand since Korea has exceeded the industry's ability to produce because of paper and chemicals shortages.

N.P.A. said studies are now being carried on designed to obtain more sensitized paper from each ton of pulp. Five-man task group appointed to study standardization, need for a paper conservation order, and possible manpower problems.

Steel and Steel Products

N.P.A. has directed steel producers to provide 288,500 tons of steel products during May for the domestic freight car construction and repair program. This is enough to permit production of 9,000 new cars and for car repairs during the month. This is reduced tonnage (310,000 tons were provided during first quarter) because of mounting demands for steel for other defense supporting programs.

Steel strapping industry has asked N.P.A. to limit inventories of strapping to 45 days' supply or 1,000 lbs., whichever is greater. Also asked that the order permit use of strapping only on containers weighing more than 90 lbs., so that small-item packaging would use substitute materials.

Hog Bristles

Further controls on use in paint and varnish brushes expected in the near future. Supply of special type nylon available as a substitute for hog bristle is rapidly decreasing.

(Please turn to page 260)



where

copper's
face value counts

and

steel's
strength and
economy are needed . . .



Gain both

with

SuVeneer[®]

COPPER CLAD METAL

Write to our Sales Department for fuller information on SuVeneer Clad Metal, and any assistance you may desire in developing projected applications. No obligation of any kind.

Superior Steel

CORPORATION

CARNEGIE, PENNSYLVANIA

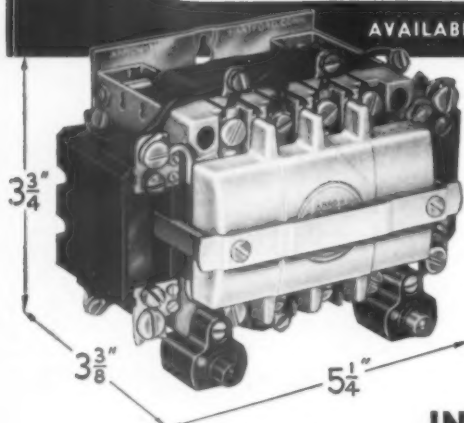
SuVeneer Clad Metal gives you copper bonded inseparably to plain steel strip, on one or both sides . . . providing the advantages of all-copper surfaces, while saving solid copper for defense needs. Your costs are lower with SuVeneer Clad Metal, wherever it can take the place of solid copper . . . and your product performance is increased with the added strength of steel!

Buy with Confidence
Profit by Performance



"RA" TYPE MAGNETIC STARTERS

AVAILABLE IN SIZES 0, 1, 2, 3 and 4



SIZE 1 ILLUSTRATED

**JUST
1/2
THE SPACE
with
FULL PROTECTION
INCREASED EFFICIENCY**

Where dependable performance and space-saving are prime factors, Arrow-Hart "RA" type magnetic starters and contactors satisfy growing demands. Featuring a patented Right Angle balanced mechanism, these starters are meeting basic engineering needs for more power and control in smaller space.

Full protection is afforded with high arc-resistant alkyl base and hood that completely isolates each pole section. Straight-thru wiring makes for easy installation and service.

Tough, dependable, long-lasting contacts are easy to inspect. Due to design and vertical operating positions, the contacts remain free from dust and dirt — assuring positive contact.

A-H "RA" Magnetic Starters are available in sizes 0, 1, 2, 3 and 4 in local and remote control or selector switch types. Conform to NEMA and JIC standards and are U. L. approved.



Call

**ARROW-HART
BRANCH WAREHOUSES
FOR SERVICE**

CITY	ADDRESS	PHONE
Boston 10, Massachusetts	157 Federal Street	Liberty 2-5354
Chicago 6, Illinois	551 West Monroe Street	State 2-4727
Cincinnati 2, Ohio	347 West Fourth Street	Dunbar 7709
Cleveland 13, Ohio	2000 W. 14th St.	Prospect 1-2799
Dallas 1, Texas	3200 Main Street	Riverside 6253
Detroit 1, Michigan	3126 Cass Avenue	Temple 3-0751
Los Angeles 13, California	405 East 3rd Street	Michigan 8048
New York 17, New York	801 Second Avenue	Murray Hill 4-0767
Philadelphia 4, Pennsylvania	3201 Arch Street	Evergreen 6-1160
San Francisco 3, California	1345 Howard Street	Market 1-2112
Syracuse 2, New York	201 East Jefferson Street	2-3645

**THE ARROW-HART & HEGEMAN ELECTRIC CO.
2504 Hawthorn St., Hartford 6, Conn. — Phone 5-1144**

(Continued from page 258)

Commercial Construction

New commercial construction projects, ranging from office buildings and hotels to retail stores and garages, will now be authorized by NPA, on condition that they contribute to the mobilization effort; are necessary for public health, welfare or safety; would relieve or prevent a hardship to a particular community. Most commercial construction had been suspended under Order M-4.

Wooden Barrels

One of the principal problems facing the slack cooerage industry is that of securing prime staves and headings. Steel for hoops and fasteners is also in short supply. Demand is rising, partly because of shortages of other types of containers. Slack cooerage production at present is below the operating capacity of the industry and will probably remain at this level unless more staves and steel are available.

Power Transformers

Power equipment industry is being given authority by NPA to apply defense order ratings to obtain specified quantities of basic materials necessary to produce certain types of power equipment during May and June for the mobilization program. NPA is now screening the monthly schedule of orders of each manufacturer and will authorize the use of a DO rating according to essentiality of end use of products.

Tungsten

Continued shortage will result in serious loss of production of tool steels, lamps and electronic equipment, industry warns. Tungsten ore is scarce and demand for tungsten-bearing products is now far greater than available supplies. If supplies do not increase, they say, production of tungsten-consuming industries may be reduced as much as 60%. Chief reason for the shortage is the complete cutoff from Far Eastern sources of supplies. High prices being asked for tungsten by other foreign sellers makes buying difficult in these areas. Defense Minerals Administration officials state that an order is being drafted to provide for equitable distribution of available tungsten-containing ores among essential users.

1 1 1

ARMY ORDNANCE DEPARTMENT SETS UP CONTRACTOR EXHIBITS

In a further move to aid industry in planning for military production, the Army Ordnance Department is setting up contractor exhibits at its fourteen District offices throughout the country. The exhibits will include samples, display boards, photographs and other essential manufacturing information pertaining to ordnance items.

The primary purpose of the exhibits is to offer manufacturers an opportunity to examine in detail the representative component parts of standard items of ammunition and material for which they may have capacity to produce.

Is **YOUR** Supplier of Zinc Die Castings On This List?



Only these
Companies
Are Licensed
to Use the
Quality
Certification
Seal....

The die casters whose names appear here are licensees of The Certified Zinc Alloy Plan. As such their sampled die castings prove on analysis to be of 'on grade' alloy meeting ASTM specifications.

When you buy from any of these die casters you are sure of obtaining zinc die castings manufactured in a plant maintaining proper alloy control.

(A bulletin describing the Certified Zinc Alloy Plan and explaining what it means to the buyer is available on request. Send for a copy.)

A & A Die Cast and Plastic Molds Co.,
West Los Angeles, Calif.
The Accurate Die Casting Co., Cleveland, Ohio
Advance Pressure Castings, Inc., Brooklyn, N. Y.
Advance Tool & Die Casting Co., Milwaukee, Wis.

Badger Die Casting Co., Milwaukee, Wis.

Central Die Casting & Mfg. Co., Inc., Chicago, Ill.
Cleveland Hardware & Forging Co., Cleveland, Ohio.
Congress Drives Division, Tann Corp., Detroit, Mich.
Continental Die Casting Corp., Detroit, Mich.
Division of F. L. Jacobs Co.
Crown City Die Casting Co., Pasadena, Calif.

Doehler-Jarvis Corp., Pottstown, Penna.
Doehler-Jarvis Corp., Toledo, Ohio
Doehler-Jarvis Corp., Chicago, Ill.
Dollin Corporation, Irvington, N. J.
Du-Wel Products, Inc., Bangor, Mich.

Fanarc Manufacturing Co., Inc., Whittier, Calif.
Federal Die Casting Co., Chicago, Ill.

Glenvale Products Corporation, Detroit, Mich.
Globe Imperial Corporation, Rockford, Ill.
C. M. Grey Mfg. Co., East Orange, N. J.

Heick Die Casting Corporation, Chicago, Ill.
Hilfinger Corporation, Toledo, Ohio
The Hoover Company, North Canton, Ohio

Kamin Die Casting & Mfg. Co., Chicago, Ill.
Kiowa Corporation, Marshalltown, Iowa
Paul Krone Die Casting Co., Chicago, Ill.

Madison-Kipp Corporation, Madison, Wis.
Milwaukee Die Casting Co., Milwaukee, Wis.
Monarch Aluminum Mfg. Co., Cleveland, Ohio
Mt. Vernon Die Casting Corp., Mt. Vernon, N. Y.

New Products Corp., Benton Harbor, Mich.

Paragon Die Casting Co., Chicago, Ill.
Parker White Metal Co., Erie, Penna.
Precision Castings Co., Inc., Syracuse, N. Y.
Precision Castings Co., Inc., Cleveland, Ohio
Precision Castings Co., Inc., Reed Metal
Crafts Division, Chicago, Ill.
Pressure Castings, Inc., Cleveland, Ohio

Racine Die Casting Co., Racine, Wis.

St. Louis Die Casting Corp., St. Louis, Mo.
Schultz Die Castings Co., Toledo, Ohio
Sterling Die Casting Co., Inc., Brooklyn, N. Y.
Stewart Die Casting Div. of Stewart Warner Corp.,
Bridgeport, Conn.
Stewart Die Casting Div. of Stewart Warner Corp.,
Chicago, Ill.

Stroh Die Moulded Casting Co., Milwaukee, Wis.
Superior Die Casting Co., The, Cleveland, O.

The Tool-Die Engineering Co., Cleveland, Ohio
Twin City Die Casting Co., Minneapolis, Minn.

Union Die Casting Co., Los Angeles, Calif.
Universal Die Casting Co., Los Angeles, Calif.

Wells Die Casting Co., San Francisco, Calif.
Western Die Casting Co., Emeryville, Calif.

AMERICAN DIE CASTING INSTITUTE, INC.

366 MADISON AVENUE

NEW YORK 17, N. Y.

D
C
I

FIRST

HOLTITE

IN FASTENERS



First in Precision — for smooth, fast application.
First in Strength — for rugged, enduring service.
First in Quality — for ultimate economy.

First as a dependable source for every fastening requirement, HOLTITE represents the most comprehensive and diversified range of industrial fasteners available from a single source. Furnished in all standard sizes, types, styles, metals and finishes — or made special to the most exacting specifications — there's a HOLTITE fastener for any application in any material.

HOLTITE-Phillips Recessed Heads

The distinctive recessed heads of HOLTITE-Phillips screws are widely recognized as a mark of quality by buyers of products fastened with these superior assembly units.

On the production line their quick-starting, straight-driving, non-skid economies cut assembly time as much as 50%. No spoilage, no waste, no injuries to workmen or finished parts, even when driven by power drivers.



CONTINENTAL
SCREW CO. New Bedford,
Mass., U.S.A.

WHERE'S THE ZINC? WHY NOT INCREASE PRODUCTION?

These questions arising from the current shortage have led to erroneous conclusions and misunderstanding. The following is a statement of the facts which should clarify the picture, according to Ernest V. Gent, executive vice president of the American Zinc Institute, in annual review of the zinc industry:

The record will show that there is nothing mysterious in the 1950 unbalance between the supply and demand for slab zinc. The unprecedented increase in civilian consumption coupled with the Government's growing requirements for stockpiling account for the record-breaking total of deliveries which exceed previous performance including the hectic days of World War II.

To increase production involves many problems which cannot be solved overnight or by a mere twist of the wrist. The shortage of concentrates and scrap to feed the smelters and refineries is the main limiting factor but not the only one. These raw materials for the smelters can only be increased by long-range planning and with the necessary inducements to attract the vital risk capital essential to the development and extraction of known reserves and the search for new deposits.

What Happened to the Zinc Supply?

In 1949 U. S. smelters and refineries produced 870,000 tons of primary and secondary slab zinc and, in the face of a decline in price from 17.50¢ to 9¢ per pound, stocks steadily increased to over 94,000 tons at December 31st in spite of a slightly firming market.

In 1950, with the demand and price rising, approximately 910,000 tons of slab zinc were produced, 849,000 tons were shipped to domestic consumers, and 18,000 tons exported. The balance together with approximately 85,000 tons drawn from smelters' stocks were shipped to the Government for stockpiling. This represents the record-breaking total of 995,000 tons of slab zinc shipped by U. S. smelters in 1950 as against 800,000 tons in 1949. With the estimated 155,000 tons of imported slab zinc added to the domestic shipments, deliveries represent a grand total of 1,150,000 tons reflecting the phenomenal demand for the metal which outstripped the substantial increase in supply.

How About Increased Production?

To understand all the problems involved, the answer to this question needs to be dealt with at greater length — but here are the facts.

It is important to emphasize the point that smelters and refineries are unable to increase output at will. First of all, there is the question of the availability of feed material, which means scrap in the case of the secondary producers of slab zinc and concentrates for the primary smelters. In addition, there is much auxiliary equipment required to ready the charge for the reduction plants, (Please turn to page 264)

Could you use this new moulded plastic?

RIGHT NOW, plastics widens its entire scope of use! As these photos of unmachined production pieces show, Kurz-Kasch engineers have solved the problem of moulding glass-filled polyester resin in complex forms and shapes—with holes and with variable wall sections. Now you can plan on plastic mouldings with new strength characteristics.

CHARACTERISTICS. As a thermosetting resin, polyester offers excellent dimensional stability—good electrical characteristics—good resistance to chemicals and medium high temperatures (can withstand 325° F. continuously). The glass fibres, with high tensile strength, are a good electrical insulator, are chemically inert and heat resistant. Combined and moulded by the Kurz-Kasch process, you get a material with a specific* tensile strength comparable to steel (*Specific-strength to weight ratio.)

PLEASE NOTE—Because of the strategic importance of this newest of a long line of Kurz-Kasch pioneering developments in plastics, we expect our output to be confined presently to priority orders. There are refinements still to be developed. And at this early stage, our technique still confines us to smaller to medium-sized pieces. But look at the possibilities! If your job is one for which this moulding technique and these material characteristics are applicable—let's talk it over, quick!

P.S. Your conventional thermosetting moulding jobs would be in good hands here at Kurz-Kasch, too. We offer complete facilities, lots of production experience, and a reputation for knowing plastics.

Dielectric Strength



Dimensional Stability

Complexity of Shape



High Impact

Chemically Inert

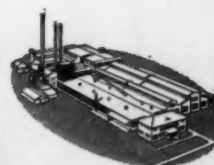


Kurz-Kasch

FOR OVER 35 YEARS PLANNERS AND MOULDERS IN PLASTICS

Kurz-Kasch, Incorporated • 1431 South Broadway • Dayton 1, Ohio

BRANCH SALES OFFICES: New York, Lexington 2-6677 • Rochester, Hillside 2415M • Chicago, Harrison 7-5473 • Detroit, Trinity 3-7050 • Philadelphia, Granite 2-7484 • Dallas, Logan 5234 • Los Angeles, Prospect 7503 • St. Louis, Delmar 9577 • Toronto, Girard 9711 • **EXPORT OFFICE:** 89 Broad Street, New York City, Bowling Green 9-7751.





From midget type $\frac{1}{4}$ " models to heavy production $1\frac{1}{4}$ " machines, there's always the one best drill for the job—a THOR . . . all handle styles, all popular speeds—every tool packing Thor's extra power . . . featuring the light weight and handling ease of Thor's modern design . . . available with stands and accessories. Call your Thor distributor for a free demonstration—or write for Catalog E-2. Independent Pneumatic Tool Co., Aurora, Ill.



Belt Sanders

Bench Grinders

Drills

Drill Stands

Fender Hammers

Grinders

Electric Hammers

Impact Wrenches

Nibbler

Nut Setters

Polishers

Sanders

Saws

Screw Drivers

Tappers

Valve Refacers

Valve Reseaters

Air Tool Kits

(Continued from page 262)

not to mention the question of the availability of handling equipment, power, fuel, and labor—all of which pose particular problems that cannot easily be solved in these days of shortages and add materially to the time factor involved.

To maintain the present rate of production, the primary slab zinc producers need 850,000 tons of zinc in concentrates. In addition, about 130,000 tons of zinc in concentrates are required for the manufacturers of zinc pigments, a total of 980,000 tons of the mine product.

On the supply side, domestic mine production in 1950, including recovery from residues, represented about 617,000 tons of zinc while the current rate of concentrate imports represents about 230,000 tons of recoverable zinc from foreign sources.

So in 1950 we had a total need of zinc in concentrates of 980,000 tons and a total available of 847,000 tons, which points up the current shortage of 133,000 tons of zinc in concentrates.

The secondary smelters, needing 50,000 to 60,000 tons of scrap to maintain current production, are up against it, too, with spare capacity available but increasing difficulty in getting enough scrap to maintain present production of redistilled slab zinc and little hope of any increase in scrap supplies.

Outlook for Increased Mine Production

At the moment, estimates for 1951 indicate an increase from domestic mines from 617,000 tons to 660/690,000 tons, not enough to fill the gap. The possibility of increased imports in 1951 is hard to measure. With the price of metal in Europe above the American level and with the stringency in supplies throughout the world, the first thing to hope for is that the present rate of imports will be maintained and that something will happen to bring about an increase.

It should be emphasized that many problems must be solved before mine production can be increased. This applies whether known reserves or new reserves are involved. The development of existing reserves in the United States is handicapped by the declining tenor of the ores and the high cost of production which makes the necessary investment a hazardous undertaking and unattractive to risk capital. Again the scarcity of supplies and labor adds to the problem and, in any event, the time required for the successful development and production of reserves is a matter of years rather than months. Exploration for new reserves involves even more time and difficulty.

Inventory Controls: NPA Regulation No. 1. Its purpose is to prevent the accumulation of excessive inventories of materials in short supply. (See NPA Order M-15.) The list of products to which it applies includes slab zinc, zinc base alloy, zinc dust, zinc oxide, zinc and zinc-base alloy scrap.

NPA Notice No. 1, provides that, to (Please turn to page 266)

Precision finishing another feature of Accurate service



... and it lowers *the ultimate cost of your springs*

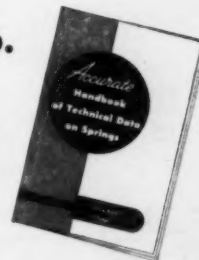
THE accuracy with which the ends of your springs are finished—whether they are looped, hooked, ground or what have you—can be of vital importance to the assembly and/or operation of your product. Carelessness, poor design or use of improper equipment in this vital part of spring manufacture can add many dollars to the ultimate cost of your springs.

Here at Accurate, skilled springmakers know the importance of accuracy in finishing ends . . . we have the most modern equipment to do the job right and economically . . . and our practical, experienced spring engineers can often recommend modifications in end design to speed assembly of your product or to make it perform better.

This is just one of many reasons why Accurate service saves you money in the long run. We'll be happy to discuss what we can do for you. Write or phone today.

ACCURATE SPRING MFG. CO.
3825 W. Lake Street
Chicago 24, Illinois

WRITE TODAY for your copy of the new revised Accurate Handbook of Technical Data on Springs. It's full of short cuts for making spring calculations.



*Be sure the
springs you
buy are
Accurate*



*Springs
Wire Forms
Stampings*



LIFTS UP TO 30 TONS

Here is a jack you'll find a lot of uses for in every department of your plant. The jack is separated from the pump by a length of hose. Thus, the jack can be placed under load in close quarters and the pump operated from the ground or convenient plane. Can be used in vertical, horizontal, inverted or inclined positions. It will lift 30 tons 2" with ease. Closed it is but 4½" high . . . weighs only 38 lbs.



Write today for bulletin
AD-3-X

THE DUFF-NORTON MANUFACTURING CO.

MAIN PLANT and GENERAL OFFICES, PITTSBURGH 30, PA. — CANADIAN PLANT, TORONTO 6, ONT.

"The House that Jacks Built"

(Continued from page 264)

prevent hoarding, no person shall accumulate in excess of the reasonable demands of business, or for the purpose of resale at prices in excess of prevailing market prices, designated materials which include slab zinc, zinc-base alloy, all zinc products such as rolled and extruded shapes, wire, and castings; zinc and zinc-base alloy scrap; cadmium metal, oxide, sales, and all cadmium scrap and secondary material. Supplementary list issued by the Defense Materials Administration includes zinc ores, concentrates, fumes, residues; and cadmium concentrates, flue dusts, residues.

Priorities. NPA Regulation No. 2, authorizes the assignment of a Defense Order or DO rating to defense orders and gives priority to such order.

NPA Order-M-9 applies particularly to producers and fabricators of zinc and dealers in zinc and zinc products.

NPA Order M-15, restricts the civilian use of zinc metal and zinc metal products during 1951 to an average quarterly rate of 80% of the use during the first six months of 1950.

Use for maintenance and repair is permitted to the extent of average quarterly use for such purposes during the first six months of 1950. Use of zinc and zinc products to fill rated orders is permitted in addition to the 80% authorized. Inventories must be held to a 45-day supply or a "practicable minimum working inventory" whichever is less. Users of less than 3000 lbs. of zinc and zinc products per quarter are exempt from the restrictive provisions.

Cadmium Restrictions: NPA Order M-19 lists items containing cadmium and the cadmium plated products which may be produced for certain stipulated uses only.

1 1 1

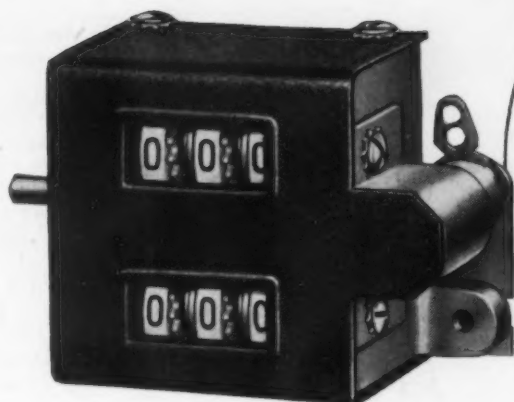
M.R.O. SUPPLIES GET PRIORITY RATING UNDER NEW ORDER

All establishments in the United States may, when necessary, use a priority rating to procure equipment and supplies for maintenance, repair and operation of their present facilities under a new program of the National Production Authority.

The M.R.O. program is provided for in N.P.A. Regulation 4. The regulation is permissive in character. No one is required to use the ratings assigned to purchase his M.R.O. supplies, but if he does so he becomes bound by the limitations of the regulation.

The regulation permits application of the rating, identified as DO-97, by business concerns and other institutions without individual authorization by N.P.A. The rating may be used solely to acquire maintenance, repair and operating supplies and may not be used for production material, nor to purchase major capital items. M.R.O. purchases are limited in any one calendar quarter to one-fourth of the firm's or institution's dollar purchases for maintenance, repair and operating purposes in 1950 (or the fiscal year end nearest to December 31, 1950). Special

(Please turn to page 268)



*"Round and round
and round they go—
and what they count,
only radarmen
know!"*

Everyone Can Count on VEEDER-ROOT



Yes, this time as before, every arm of the service counts on Veeder-Root in some way or other. The counters shown, for instance, supply figures that radarmen readily translate into vital information.

And there are scores of other Veeder-Root Counters, standard and special, electrical and mechanical, that "talk the language" of more military and civilian jobs than you can shake a slide-rule at!

VEEDER-ROOT INC.

HARTFORD 2, CONN. • GREENVILLE, S. C.
Montreal, Canada Dundee, Scotland
Offices and agents in principal cities



VEEDER-ROOT

COUNTERS

"Count Everything on Earth"



**Cleveland has specialized for 35 years
in making a few items well—**

Top Quality

Cap Screws • Set Screws • Milled Studs

Specialization at "Cleveland Cap" guarantees closer attention to accurate production, rigid inspection, and prompt shipment (as conditions permit). Our capacity is concentrated on standard Cap Screws in an unusually wide range of sizes—all popular heads; square head Set Screws, and Milled Studs. We also have capacity for producing your special design headed and threaded parts by cold extrusion. See your jobber for *standard* items; write us about your "specials."

THE CLEVELAND CAP SCREW COMPANY

2917 East 79th Street, Cleveland 4, Ohio

Warehouses: Chicago • Philadelphia • New York • Providence

CLEVELAND *Top Quality* FASTENERS



(Continued from page 266)

provisions for seasonal businesses, new concerns, etc. have been made. Detailed information on them and on the order generally may be obtained from U. S. Department of Commerce field offices.

1 1 1

CRUCIBLE RESEARCH PRODUCES TWO NEW STRATEGIC STEELS

Two new Crucible alloy steels which conserve scarce and strategic materials are now available to industry, it was announced recently by L. L. Ferrall, director of Metallurgy, Crucible Steel Company of America. Neither of the steels contain such scarce elements as cobalt or columbium, and one alloy contains less than one per cent of nickel.

These new alloys were created for applications which require high strength at elevated temperatures. Possible uses include aircraft jet engine parts and high temperature industrial equipment.

The availability of the new steels now is the result of an intensive research and development program which has been in progress since the strategic alloys shortage was foreseen. Crucible also has expanded its research program for the development of other high temperature alloys and special purpose steels, fields in which the Company has been a leader for the past fifty years.

Technical Details

The new alloy steels are of the stainless and heat-resisting types and have been designated CSA 39 and Crucible 422.

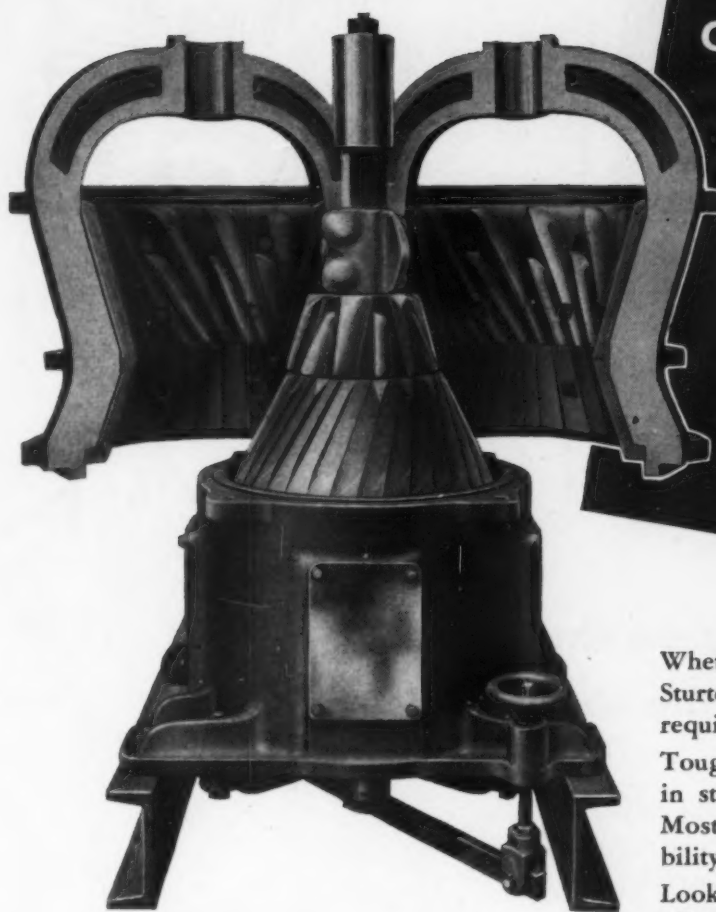
CSA 39 is an iron base alloy containing about 27 per cent nickel, 18 per cent chromium, 9 per cent molybdenum and 3 per cent tungsten. It is designed for use at temperatures between 1300 and 1600 F, and does not require special hot-cold working practices to produce the high strength required, but can be hardened by simple heat-treatment.

Crucible 422 also is an iron base alloy and contains 13 per cent chromium, 1 per cent tungsten, 1 per cent molybdenum, less than 1 per cent nickel and less than one-half per cent vanadium. This steel not only contains neither cobalt nor columbium but is very low in nickel, an alloying element high on the list of scarce metals. Crucible 422 can be hardened by normal heat treating procedures. It is recommended for use at temperatures at 1000 to 1100 F.

1 1 1

NEW PLASTIC SEPARATOR FOR STORAGE BATTERIES

New plastic battery separator called Pormax, a polyvinyl chloride synthetic, has been developed by The Electric Storage Battery Co., company engineers pointing out that the new separator is very porous, non-brittle, and more acid-resistant than either wood or rubber separators. They claim that it substantially increases battery life, stating that tests of the new separators in batteries in the company's laboratories and on the road demonstrated their quality and life are equal to the total lifetime of several sets of wood separators in automobile batteries.



When It's
Grinding or Pulverizing

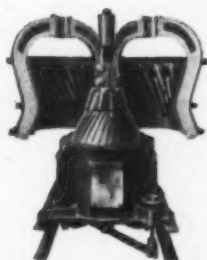
STURTEVANT
EQUIPMENT

*DOES THE
JOB FAST!*

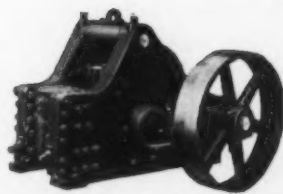
Whether you grind soft or hard materials, there is a Sturtevant Grinder or crusher exactly suited to your requirements.

Tough and rugged, Sturtevant Equipment has the built-in stamina to stand up under continuous operation. Most of this equipment has the "open door" accessibility which makes cleaning easy.

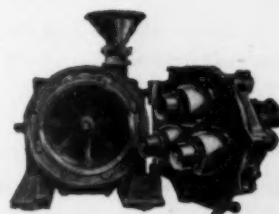
Look into Sturtevant Grinders and crushers for your applications. These machines will give you the exact mesh you want . . . cut your costs by increasing production. Write for catalog today.



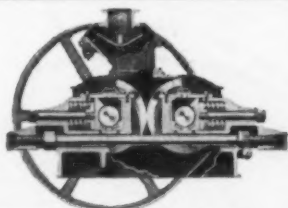
ROTARY FINE CRUSHERS for intermediate and fine reduction (down to $\frac{1}{8}$ " mesh). Open door accessibility. Soft or moderately hard materials. Efficient granulators. Excellent preliminary Crushers preceding Pulverizers.



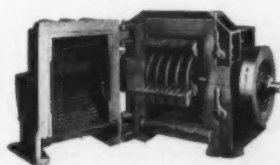
JAW CRUSHERS for coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.



RING-ROLL MILLS for medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operated in closed circuit with Screen or Air Separator. Open door accessibility. Many sizes. No scrapers, plows, pushers, or shields.



CRUSHING ROLLS for granulation, coarse or fine, hard or soft materials. Automatic adjustments. Crushing shocks balanced. For dry or wet reduction. Sizes 8 x 5 to 38 x 20. The standard for abrasives.



SWING-SLEDGE MILLS for coarse and medium reduction (down to 20 mesh). Open door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.



MOTO-VIBRO SCREENS screen anything screenable. Classified vibrations. Unit construction—any capacity. Open door accessibility. Open and closed models with or without feeders. Many types and sizes—range of work $\frac{1}{2}$ " to 60 mesh.

STURTEVANT MILL COMPANY

107 CLAYTON STREET, BOSTON 22, MASS.

DESIGNERS & MANUFACTURERS OF DENS AND EXCAVATORS • MIXERS • SCREENS • PULVERIZERS • ELEVATORS • AND COMPLETE FERTILIZER UNITS

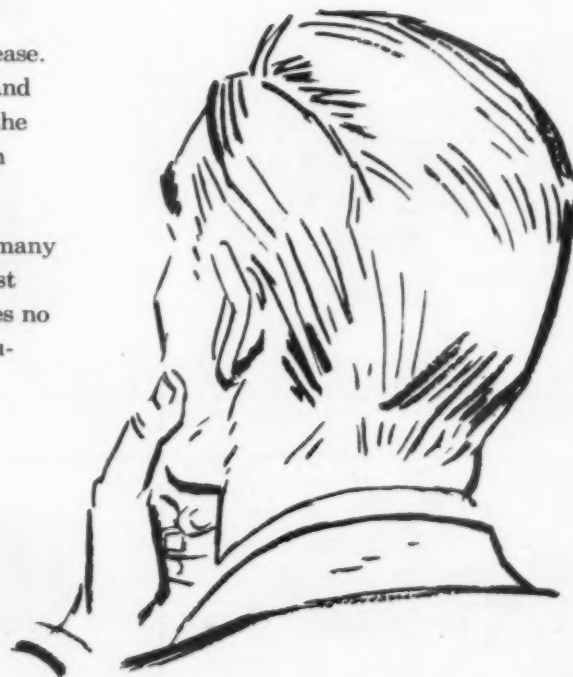
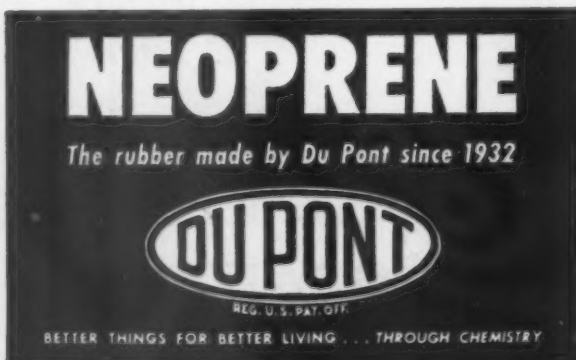


**"This resilient mat is easy on the feet...
yet takes the toughest treatment."**

"Getting kicked around is everyday routine for this neoprene standing mat. But it can take the worst scuffing and cutting from heavy work shoes or sharp metal scrap because of neoprene's outstanding resistance to abrasion. The mat's resilient ribs can support a man's weight with foot-saving ease. Still they're flexible enough to scrape grime off his shoes. And even oil splattered from operating machinery won't cause the mat to go to pieces. For neoprene resists deterioration from grease, oil and heat—won't get soft or sticky with age."

This ribbed standing mat is just one more example of the many fine rubber products that give more efficient service and last longer because they're made with neoprene. Du Pont makes no finished products of neoprene, but your rubber goods manufacturer or distributor will be glad to tell you about the neoprene products he supplies.

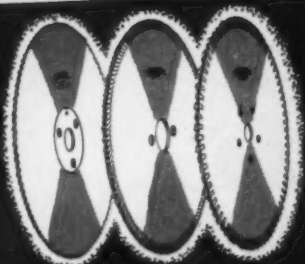
Tune in "Cavalcade of America," Tuesday nights—NBC coast to coast



FREE! The Neoprene Notebook

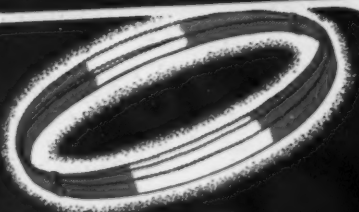
Interesting stories . . . new, unusual applications and products of neoprene. Write E. I. du Pont de Nemours & Co. (Inc.), Rubber Chemicals Division R-4, Wilmington 98, Delaware.

Here's a "Short"
of **SIMONDS**
Metal-Cutting Line



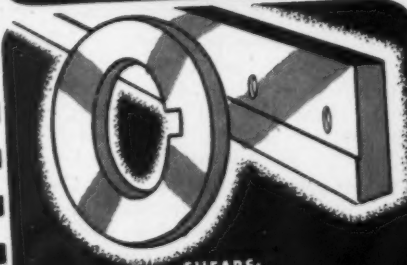
CIRCULAR SAWS:

Most complete line of types and sizes . . . Solid, Segmental, Inserted-Tooth, Carbide-Tipped, for cutting any type of metal faster, smoother, straighter.



BAND SAWS:

Regular Hard-Edge Band Saws, also Skip-Tooth Hard Edge, and Spring-Temper Band Saws . . . all 3 run more easily.



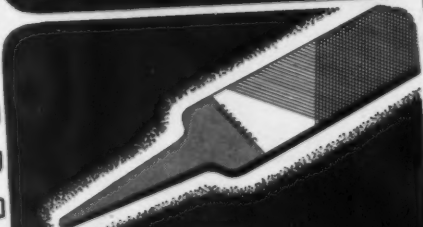
SHEARS:

"Red Streak" Rotary Shear Knives for clean cutting of strip or sheet. . . "Tungsweld" Squaring Shears give you sharp savings in cutting thin metal.



HACKSAW BLADES:

Famous "Red End" Blades for hand or power cutting . . . for top money's worth on any hacksaw job.



FILES:

Only Simonds "Red Tang" has the teeth like a metal-cutting saw . . . teeth that remove more metal with less effort.

TOPS

for ALL NON-FERROUS CUTTING



On all non-ferrous metals, here's the toughest, most "stand-up-and-take-it" saw made . . . with a proven production record on everything from light-wall sections to solids.

SIMONDS heat-treats these saws for individual applications, according to speed, type of material, and machine. And SIMONDS design assures top cutting efficiency . . . with correct tooth-shape that eliminates clogging of gullets . . . with high, smooth finish that resists adherence of chips to plate . . . and with proper clearance for freer, cooler, straighter cutting.

Standard sizes are immediately available from stock . . . so see your Simonds Distributor *today*.

SIMONDS
SAW AND STEEL CO.

FITCHBURG, MASS.

Branch Offices in Boston, Chicago,
San Francisco and Portland, Ore. Canadian Factory in Montreal, Que.

Personalities



IN THE NEWS

J. S. Smith has been named director of Purchases for the Wagner Electric Corporation, St. Louis, Mo. Mr. Smith, who has been with Wagner for 32 years, has held a wide variety of positions with



J. S. Smith

the company. In 1936 he was appointed a special representative to the steel industry, with headquarters in Pittsburgh, and held that position until 1942, when he returned to St. Louis as manager of the industrial sales department.

In order to further improve the operating efficiency of the purchasing department, Mr. Smith has established six buyer groups. Each is responsible, in addition to the actual placing of orders, for following up and expediting deliveries. The first three groups are: R. Bader, castings; E. K. Raemdonck, copper; M. H. Snelling, steel. The groups constitute the metals division and are under the supervision of H. S. Garrett as manager of the division.

The second three groups are: J. E. Roth, automotive component parts; M. W. Cox, electrical component parts; E. T. Pound, maintenance and supplies. These groups are directly supervised by E. V. Zimmerman, assistant to J. V. Christman, Purchasing Agent.

D. J. Galen, for the past 25 years secretary of Crown Zellerbach Corporation and predecessor companies, has been appointed vice-president and will be in charge of purchasing. Oakley Dexter has relinquished his functions as Director of

Purchases, but retains his title as Assistant Vice President. He is now senior officer of the Seattle, Wash. division.

Since his appointment in 1912 as confidential secretary to the vice-president and general manager of the Crown Columbia and Floriston companies, Mr. Galen has been continuously associated with executive functions of the corporation. He was named secretary of the Crown Willamette Paper Company in 1926 and continued in that capacity after Crown Willamette merged with Zellerbach Corporation. Headquarters is at San Francisco, Calif.

R. H. Anderson has been appointed to the position of Director of Purchases of the New Holland Machine Division of The Sperry Corporation, New Holland, Pa. Mr. Anderson was formerly Division



R. H. Anderson

Purchasing Agent. D. M. Nason, formerly plant purchasing manager, has been named Purchasing Agent of components and supplies. F. E. Gorton, formerly Purchasing Agent of the Glenwood Range Company, has joined New Holland as Purchasing Agent of raw materials.

Mr. Anderson, who joined New Holland in 1947, has been active in industrial purchasing for 20 years. Mr. Nason, who has been with the division since 1949, entered the purchasing field in 1942. Mr. Gorton was associated with Glenwood Range from 1927 until he joined New Holland last December.

Morton L. Greene has been appointed to the newly created position of Director of Purchases for National Pneumatic Co., Inc., Boston, Mass. Mr. Greene has a wide background of procurement experience, having served in executive purchasing capacities with The Bassick Company, General Electric Company, and the Emerson Radio and Phonograph Corporation.

William R. Gerhardt has been appointed Assistant Director of Procurement for Remington Rand, Inc., New York, N. Y. He will supervise procurement of basic items including lumber, leather, textiles, paper, ferrous and non-ferrous metals including bar, sheet and strip metals, castings and forgings.

Prior to joining the company he was associated with the Mallinckrodt Chemical Works. Mr. Gerhardt retired from the Army as a colonel after 30 years of service, and his military experience included research, engineering, production and procurement of varied ordnance materials and equipment.

C. S. Immig has been appointed Director of Purchases for The Hydraulic Press Manufacturing Company, Mount Gilead, Ohio. Mr. Immig was formerly associated with Fairbanks Morse & Co.,



C. S. Immig

Chicago, Ill., and Dominion Electric Corporation, Mansfield, Ohio. He has spent over 15 years in purchasing activities of heavy equipment manufacturers.

(Please turn to page 274)

Chas. Pfizer & Co., Inc., is the discoverer and sole manufacturer of terramycin, the newest "wonder drug," which has proved effective in the treatment of *more than 50 acute infections*. Pfizer is the world's largest producer of antibiotics and a leading producer of synthetic Vitamin A.

Power—lots of it and never failing—is needed by Pfizer's modern plant at Groton, Conn., to safeguard round-the-clock production. The plant relies entirely upon its two steam turbines for power, light, and refrigeration. For the utmost protection, "Job Proved" Sunvis

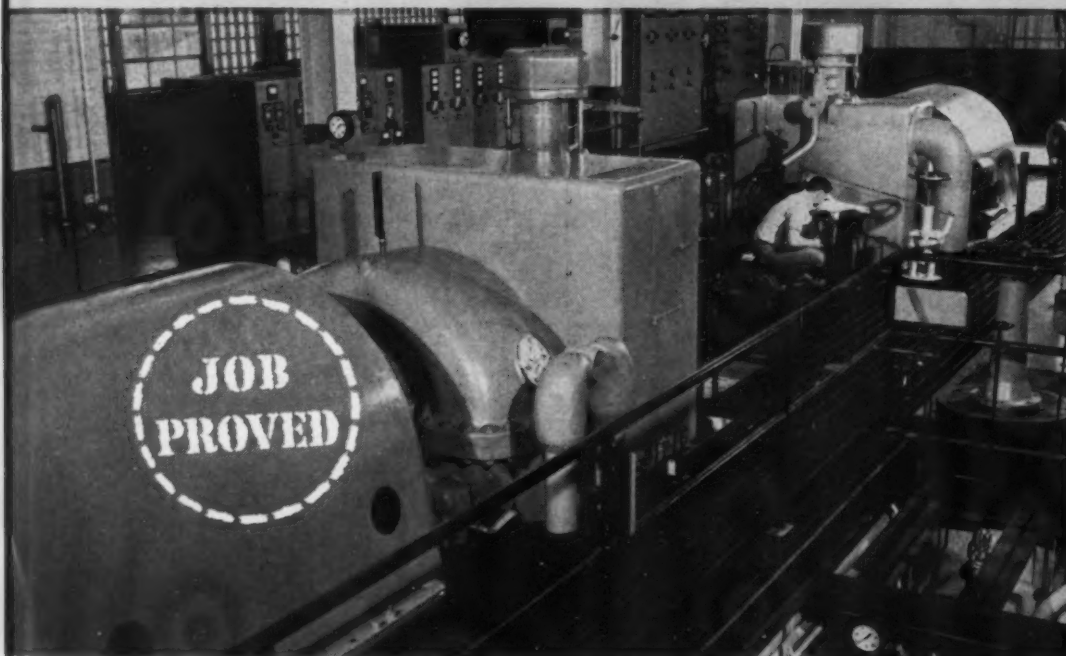
916 Oil was chosen as the lubricant for these turbines when installed—two years ago. This Sunvis 916 has been in continuous service ever since. As expected, inspections show the turbines free from rust, sludge, and corrosion; and laboratory tests show the oil ready for thousands of hours of continued service.

Sunvis 900 Series Oils are unsurpassed as turbine lubricants. Under normal operating conditions they will be *good for the life of your turbines*. For complete information, telephone the Sun Office nearest to you or write Department PU-4.

TERRAMYCIN being processed as an elixir, a new dosage form in which this "wonder drug" is more easily taken by infants and old people. The work is carried on in a sterile air-conditioned room.



POWER FOR "WONDER DRUG" PRODUCTION PROTECTED BY SUNVIS TURBINE OIL



TWO 2,500 KW TURBINES, each charged with 300 gallons of Sunvis 916 Oil, generate all of the plant's power. The condensing-extraction unit has been running over 15,000 hours, the back-pressure unit over 7,000 hours.



THE LUBRICATING OIL flows continuously through a layer of wool, then a tank of water, and finally a triple bag filter. Recent tests at Sun's laboratories show that the oil is in excellent condition, and good for thousands of hours more.

SUN INDUSTRIAL PRODUCTS

SUN OIL COMPANY, PHILADELPHIA 3, PA. • SUN OIL COMPANY, LTD., TORONTO AND MONTREAL



George T. Cunningham has been appointed Purchasing Agent for the Packing Equipment Division of Food Machinery and Chemical Corporation, Riverside, Calif. He succeeds Leo D. Harris, resigned. Mr. Cunningham has been with



George T. Cunningham

Food Machinery for the past 10 years and has had considerable experience in material control, production planning and engineering procurement.

Harry D. Hanafus has been appointed Purchasing Agent of the recently formed Electronic Tube Division of Westinghouse Electric Corporation with headquarters at the company's plant in Bloomfield, N. J. The announcement was made by Andrew H. Phelps, Vice President.

Mr. Hanafus joined the Westinghouse Lamp Division purchasing department in Bloomfield in 1944, becoming Assistant Purchasing Agent of the division the next year. His experience in the purchase of electronic tube and lamp manufacturing equipment dates back 21 years. Prior to joining Westinghouse, he was Purchasing Agent for the Radio Corporation of America tube manufacturing divisions in Harrison, N. J., and Lancaster, Pa.

J. W. Margate has been appointed to the newly created position of Vice President in Charge of Purchasing of Granite City Steel Company, St. Louis, Mo.

D. W. Cameron has been appointed Manager of the crude oil purchasing department of Carter Oil Company, Shreveport, La.

J. M. Courtright has been appointed Manager of Purchasing-Stores Department, Shell Oil Company of Canada, Limited, Toronto, Ont. Mr. Courtright will head up Shell's extensive buying organization throughout Canada. He was formerly sales manager of Shell's British Columbia operations for the past two and a half years. A one time Olympic track star, Mr. Courtright received his B.A. degree at the University of Ottawa, and his B.Sc. at Queen's University.

Charles D. Zimmerman, formerly purchasing agent for the McGrath Mfg. Co., has been appointed Assistant Purchasing Agent for The Refinite Corp., Omaha, Nebraska.

William J. Roemer has been appointed Purchasing Agent for the Acushnet Process Company, New Bedford, Mass., succeeding the late Frank A. Jepson.

Mr. Roemer previously had 28 years' experience in various capacities with the Bristol Company, Waterbury, Conn. He had a long experience in sales before turning to purchasing. He has been active in association work, being elected president of the Purchasing Agents Association of Connecticut in 1946, and national director in 1947.

Neil Kegelmeyer has been appointed Purchasing Agent of the Crescent Machine Division, Rockwell Manufacturing Company, Leetonia, O. He was formerly assistant to Robert C. Harrold, who resigned from the post after 46 years with the company. Mr. Harrold will maintain his connection with the company on a consulting basis.

Jacob Levinson has been named Director of Purchases for The Levinson Steel Company, Pittsburgh, Pa. Louis Siegel has been promoted to Purchasing Agent.



Jacob Levinson



Louis Siegel

Mr. Levinson has been an officer of the company since 1917. Mr. Siegel, who joined the concern's sales department in 1945, has served in various managerial capacities.

Peter Christiansen has been appointed Purchasing Agent of the Lloyd Manufacturing Company (Heywood-Wakefield Co.), Menominee, Mich. Mr. Christiansen, who has been Assistant Purchasing Agent, succeeds Chester O. Porterfield, who has retired after 43 years service with the company. Mr. Christiansen joined the firm in 1922.

Gustav Schwab, Jr., has been appointed Assistant Purchasing Agent of Dravo Corporation, Pittsburgh, Pa. He replaces William R. Havlak, who was named Administrative Manager of the Contract Department, Engineering Works Division.



Gustav Schwab, Jr.

Mr. Schwab, a graduate of Stevens Institute of Technology, has been with Dravo since 1939. He was supervisor of production control at the firm's Wilmington, Del. shipyard during the last war. Since 1949, he has been a member of the sales engineering staff. Mr. Havlak is a graduate of the University of Pittsburgh, with a master's degree in civil engineering. He joined Dravo in 1935 and has held various positions.

Joe Mate has joined Dulane, Inc., River Grove, Ill., as Purchasing Agent. Mr. Mate was formerly in charge of purchasing at the Washington Blvd. Division of Motorola, Inc. Prior to that association he served in a similar capacity with the Stewart-Warner organization.

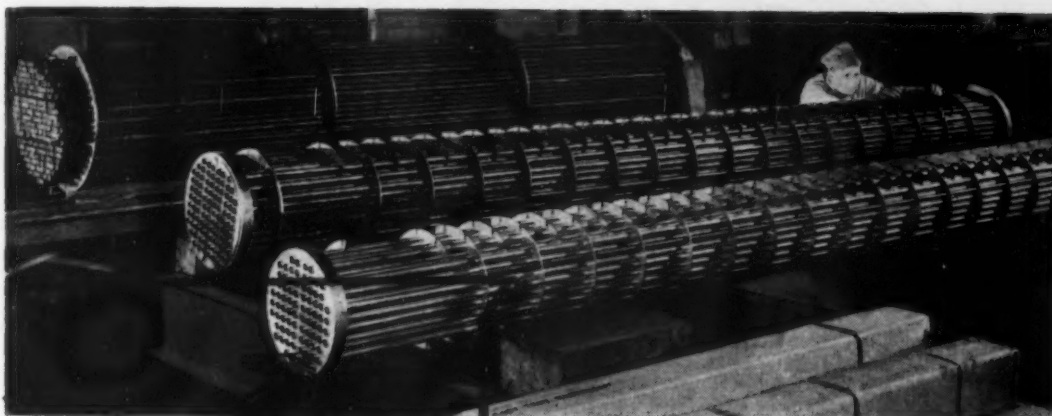
Russel J. Jones, General Purchasing Agent of Chrysler Corp. of Canada, Ltd., Windsor, Ont., has been elected a director of the company.

Frederick B. Hufnagel, Jr., has been appointed assistant to R. H. Anders, Director of Purchases, Sun Oil Company, Philadelphia, Pa. Mr. Hufnagel has been relieved of his duties as assistant coordinator in the marketing department for the duration of the current emergency. He will devote his time to representing Sun Oil with Government agencies in the administration of regulations controlling materials and their supply, as they affect all departments of the company.

Wallace E. Marsh has been appointed Purchasing Agent of the Monroe Calculating Machine Company, Orange, N. J. He succeeds the late R. J. Montgomery. Mr. Marsh, who has been with the company for 13 years, was Assistant Purchasing Agent.

J. Morris O'Hehir has been appointed Purchasing Agent at Plant 2, International Business Machines Corp., Poughkeepsie, N. Y.

(Please turn to page 276)



A. O. SMITH
designs with
TRENTWELD

When A. O. Smith, big name in steam and heat transfer equipment recently designed and built a heat exchanger unit for Socony-Vacuum — TRENTWELD Stainless Steel tubing was used throughout. This heat exchanger unit for use in the petroleum industry is another example of how TRENTWELD is preferred by designers for products where stainless steel tubing fits the bill.

And here's why: TRENTWELD is the product of tube specialists. That means you're assured uniform quality and specifications of manufacture that meet your most exacting needs. Then too, TRENTWELD is available in a full range of sizes— $\frac{1}{8}$ " to 36" in diameter, in all grades and finishes. When the job requires stainless steel tubing, check with us. TRENT TUBE COMPANY, *Subsidiary of Crucible Steel Company of America*. General offices and plant — East Troy, Wisconsin; Sales offices in principal cities.

TRENTWELD

S T A I N L E S S S T E E L T U B I N G

TRIPLEX...

for toughness

1st choice on heavy equipment



CAP SCREWS:
1/4" to 1" diameter
and to 8" long.



SET SCREWS:
1/4" to 3/4" diameter
and to 4" long.



MACHINE BOLTS:
1/4" to 1" diameter
and to 60" long.



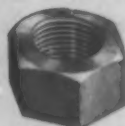
STEP BOLTS:
1/4" to 1/2" diameter
and to 6" long.



CARRIAGE BOLTS:
1/4" to 1" diameter
and to 60" long.



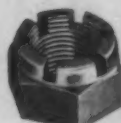
FLOW BOLTS:
1/4" to 3/4" diameter
and to 6" long.



SEMI-FINISHED NUTS:
1/4" thru 1 1/4"



LAG BOLTS:
1/4" to 3/4" diameter
and to 20" long.



CASTELLATED NUTS:
1/4" thru 1 1/4"

Whether you use cap or set screws, nuts and bolts or all of them, make TRIPLEX your first choice for heavy equipment if you want sheer ruggedness and ample holding power for over-loads.

TRIPLEX Threaded Fasteners are noted for their Toughness that assures trouble-free service on heavy machinery that must take rough punishment. Write for catalog or wall chart today. The TripLex Screw Company, 5317 Grant Avenue, Cleveland 5, Ohio.

TRIPLEX *for TOUGHNESS*
CAP AND SET SCREWS • BOLTS, NUTS AND RIVETS

H. N. May has been appointed Chief of Material for Consolidated Vultee Aircraft Corporation's San Diego (Calif.) Division. Mr. May, who was formerly Purchasing Agent for the division, will have charge of both subcontracting and purchasing. J. C. Buchan, buying supervisor, succeeds Mr. May as division Purchasing Agent.

Richard W. Devans has been elected treasurer and assistant to Robert R. Miller, president of Precision Metal-



Richard W. Devans

smiths, Inc., Cleveland, O. Mr. Devans will continue in charge of purchasing, having served the company in that capacity as vice-president.

Allen C. Kane, Jr., has been appointed Purchasing Agent of the Frank H. Fler Corporation, Philadelphia, Pa., chewing gum manufacturer. He succeeds the late



Allen C. Kane, Jr.

Harry G. Blair. Mr. Kane originally joined the company as secretary to the president, and was appointed Assistant to the Purchasing Agent in 1948. He has been Acting Purchasing Agent since November, 1950.

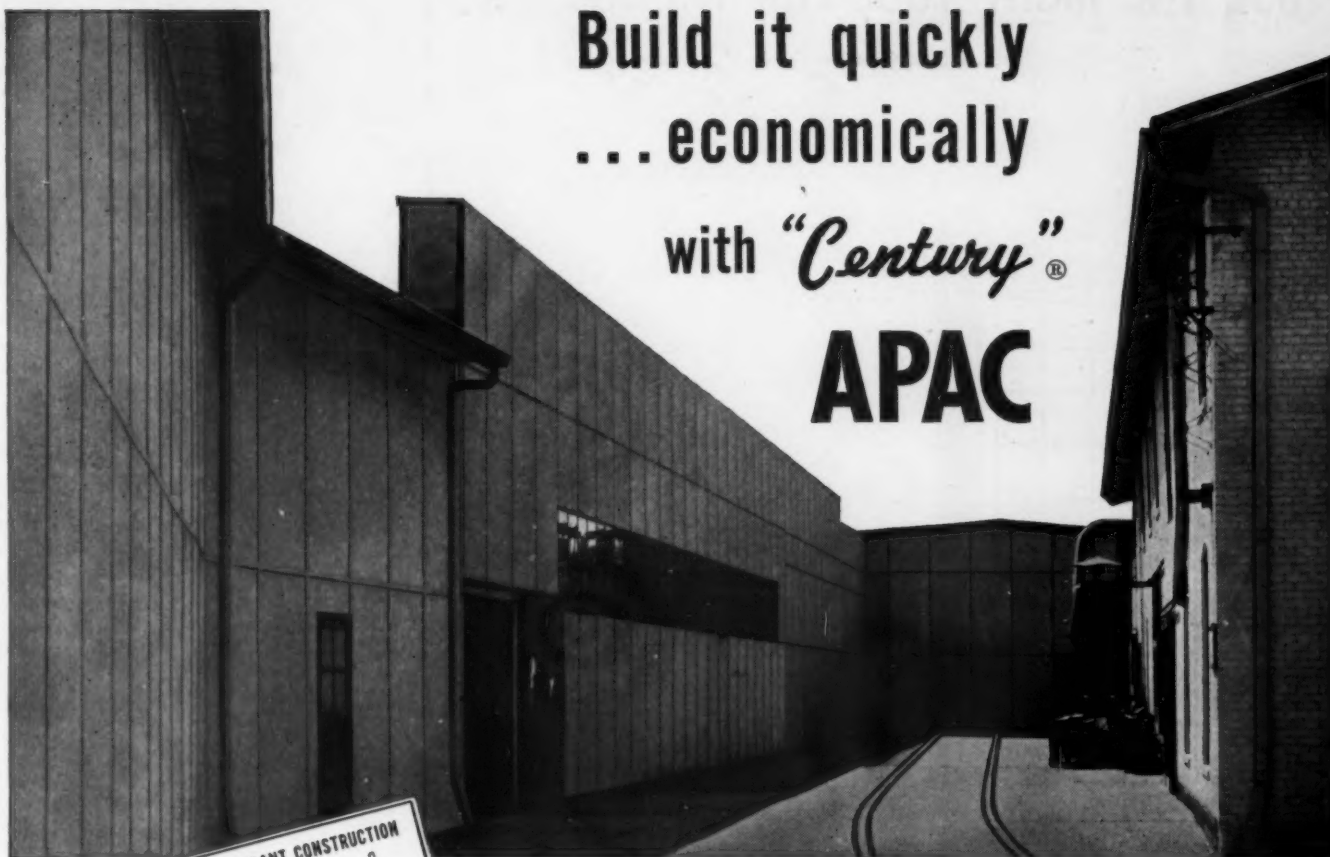
Vincent A. Muccio has been named Purchasing Agent of Muzak Corporation, New York, N. Y. He replaces A. C. Webster.

William Ledyard Oliver has been named City Purchasing Agent of Montgomery, Ala.

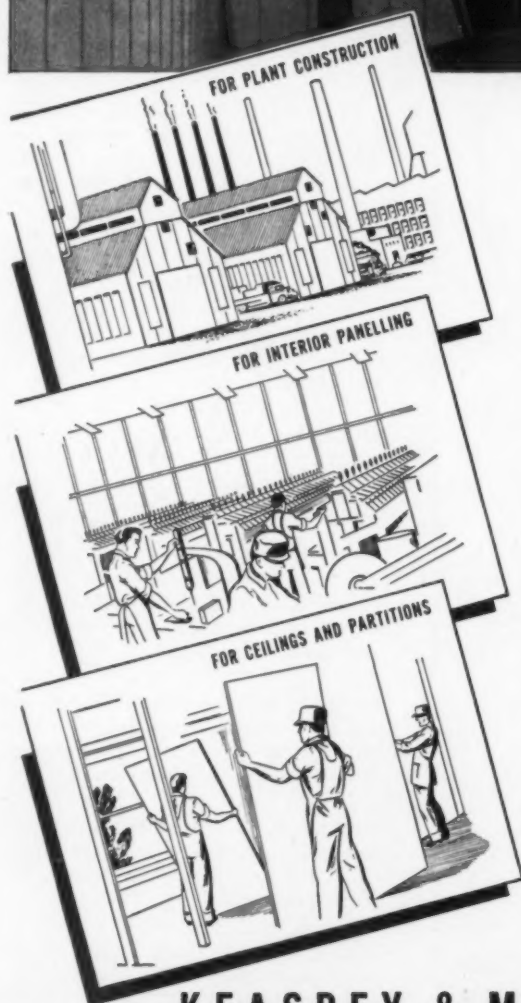
Thomas E. Bassett has been named Purchasing Agent of the Republic Carloading & Distributing Co., Inc., New York, N. Y.

(Please turn to page 278)

Build it quickly ...economically with "Century" APAC



Track-side building with both exterior and interior walls of "Century" APAC



Whatever your construction plans—interior, exterior, new structures, or modernization—you'll build better, at less cost, with "Century" APAC... Keasbey & Mattison's versatile asbestos-cement structural sheet.

Consider the advantages of building with APAC: It's a low-cost material of stone-like durability. Application is quick and inexpensive: Sheets are large size (standard 4' x 8'); are easily cut and fitted on the job; can be fastened with ordinary nails or screws. Labor costs are low.

And APAC needs but a minimum of maintenance! The all-mineral asbestos and cement composition resists weather and moisture—*can't burn*—is unaffected by rodents or termites and will not rust or rot. The attractive natural gray surface never needs protective painting!

These are just a few of the many reasons why so many plants are using "Century" APAC for siding, office paneling, fire-resistant sheathing in shops and stock-rooms, storage bins, linings for elevator casings, shower stalls—to name but a few uses. We'll be glad to send you complete information on "Century" APAC, and the name of your nearest distributor. Write us.

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA



Nature made Asbestos...

*Keasbey & Mattison has made
it serve mankind since 1873*

USE THE RIGHT TOOL FOR THE JOB . . .



Ask your
BILLINGS DISTRIBUTOR
He'll tell you why!

AW4

THE BILLINGS & SPENCER CO. HARTFORD 1, CONN. U.S.A.

VITALLOY® FORGED
ADJUSTABLE WRENCH

(Continued from page 276)

A. N. Laret has been promoted from General Purchasing Agent to Vice President in Charge of Purchases of the St. Louis-San Francisco Railway Co., St. Louis, Mo. Mr. Laret began his career with the line as a stenographer in 1906.

Woodard M. Walker has been appointed City Purchasing Agent of Haverhill, Mass.

AMONG THE COMPANIES YOU BUY FROM

Whiting, Ind. — Federated Metals Division, American Smelting and Refining Company. Wyman L. Wills has been placed in charge of extruded solder sales here. He replaces the late James C. Shaw.

New York, N. Y.—Executive offices of the Colorado Fuel and Iron Corporation and the New York sales offices of the Wickwire Spencer Steel Division have been relocated at 575 Madison Avenue.

Dayton, O.—A. Milne & Company. A new tool steel warehouse has been opened here at 20 South Charter St., under the direction of John I. Kitts.

Houston, Tex.—Federated Metals Division, American Smelting and Refining Company. A new office building has been completed here at 9000 Market Street Road.

Troy, O.—The Gummed Products Company. Edward F. Herrlinger, II, has been named assistant sales manager. He is the fourth member of the family currently holding an administrative position in the company.

Los Angeles, Calif. — Graybar Electric Company. S. W. Scott has been appointed Pacific district manager. He succeeds H. L. Harper, retired.

New York, N. Y.—DeWalt, Inc. Walter H. Roising has been appointed district sales manager, supervising sales in certain areas of New York, New Jersey and Connecticut.

New York, N. Y.—George Munson has joined the company as a field engineer in the metropolitan area. He was formerly president of Thread Rolling, Inc.

New York, N. Y.—Speco, Inc. An eastern district sales office has been opened at 30 Church Street. David M. Waterhouse is district manager.

Los Angeles, Calif.—Arcos Corporation. A west coast office and warehouse has been opened here at 427 South Western Avenue. B. E. David has been appointed district manager.

(Please turn to page 280)

DISSTON

Announces a New

WASTE PREVENTION PLAN

279

Perfection

IN PLASTICS

PRODUCT, PART OR PACKAGE



• *From the right plastic . . . by the right process . . . Watertown promises you the perfect product, whatever your specifications might be. Our injection, compression and transfer molding machinery is up to the minute . . . and our laboratory, second to none in the industry, has every testing device to insure development . . . and production, of products, parts or packages that meet the most exacting requirements. In the final analysis, an experienced staff of designers, engineers, chemists and production men . . . working with top-notch equipment . . . remains your best possible assurance of a job well done.*

For the complete plastics job, from idea to delivery, consult . . .

Watertown

WATERTOWN MANUFACTURING COMPANY
200 Echo Lake Road • Watertown, Connecticut

Syracuse, N. Y.—Century Electric Company. The company's branch office in Rochester has been moved to 814 Syracuse-Kemper Building, 224 Harrison Street, Syracuse.

Dallas, Tex.—The Billings & Spencer Company. C. A. Wagner has been appointed direct representative for Texas, Arkansas, Louisiana and Oklahoma.

Washington, D. C.—National Electric Products Corporation. T. M. Linton has been chosen as district manager of the Washington territory.

Chicago, Ill.—Danly Machine Specialties, Inc. Everett K. Morgan has been named general sales manager of the



Everett K. Morgan

mechanical press line. He was formerly associated with the Giddings & Lewis Machine Tool Company, Fond du Lac, Wis.

Chicago, Ill.—Conoflow Corporation. J. R. Simpson and Company, 600 S. Michigan Ave., has been appointed representative in Illinois, Indiana and Wisconsin.

Matawan, N. J.—Hanson-Van Winkle-Munning Company. Herbert W. Marx and Calvin E. A. Solla are recent additions to the company's sales force.

Washington, D. C.—Ridgidized Metals Corporation. Robert A. Parks, Suite 827, Bowen Building, has been named Washington representative.

New York, N. Y.—Robert Gair Company, Inc. John Driscoll has been appointed manager of the New York sales office of the folding cartons division.

New York, N. Y.—Kalex Corporation. Frank L. Hooper has been appointed general sales manager.

Nashua, N. H.—Nashua Gummed and Coated Paper Company. Austin W. Sanborn, formerly assistant sales manager of the coating division, has been appointed sales manager of the heat seal and coated products division. Harry C. Hilbert, formerly assistant sales manager of the gumming division, has been appointed sales manager of the division.

New Orleans, La.—Graybar Electric Company. L. J. Olivier has been appointed manager of the company's branch house here.

(Please turn to page 282)



What put ideas like these into a top P.A.'s head?

TOP purchasing agents who buy component parts have been thinking like this for a long time.

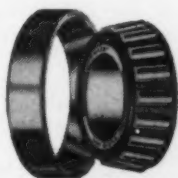
A successful P.A. knows that top quality parts make products easier to sell. So, when he buys parts, he thinks like a salesman—considers how much the part adds to his product's saleability. A P.A. also knows he can supplement his company's engineering skill by buying from the company that offers a complete engineering service, so he's engineering-minded. In addition, he's alert to the advantages of using parts with wide public acceptance, so his mind runs to advertising. And since a top P.A. keeps his eye on cost, he thinks in terms of price.

By keeping quality, service, and public acceptance in mind, as well as price, a top P.A. determines the value of parts he buys. As a simple guide to value, you may find this formula helpful:

$$\text{Value} = \frac{\text{quality} + \text{service} + \text{public acceptance}}{\text{price}}$$

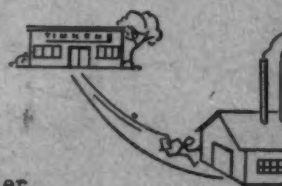
Timken® bearings give you the highest quality, the best service and the greatest public acceptance. And since a big advantage *above* the line obviously gives more value than a small one *below*, your best value in tapered roller bearings is *Timken* bearings! The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN
TRADE MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



P. A. Notes:

FAST SERVICE! When you ask for engineering help from the Timken Company, you get it in a hurry. 100 engineers devote their full time to helping Timken tapered roller bearing users with bearing and assembly problems.



THE TIMKEN COMPANY TALKS TO MILLIONS OF PEOPLE.



It's estimated that the Timken Company's extensive advertising program makes more than 669,450,000 reader impressions every year. The public acceptance created by this wide appeal helps sell any Timken bearing equipped product.

FOR DISTINGUISHED SERVICE. The trade-mark "Timken" is your assurance—and your customer's—of long, trouble-free performance. It means extra value to everyone, extra sales to your company.



NOT JUST A BALL ○ NOT JUST A ROLLER □ THE TIMKEN TAPERED ROLLER □ BEARING TAKES RADIAL ○ AND THRUST → ○ ← LOADS OR ANY COMBINATION → ○ ←

CHICAGO Mounted WHEELS



FIRST

AND

Finest

10 Big Advantages

1. First in the Field—Unexcelled "Know-How"
2. Stronger Mandrels—Special Analysis Steel
3. Wheels Guaranteed to Remain on Mandrels
4. Constant Concentricity for Perfect Balance
5. Widest Variety of Sizes and Shapes
6. Strongest Construction for Longest Life
7. Greater Cutting Freedom—Faster Cutting Action
8. Better, Finer Finishes Positively Assured
9. Job-Engineered to Your Particular Requirements
10. Recommended by Skilled Mechanics and Craftsmen

Free Sample Wheel

Give details of your operation. We'll supply correct sample. No obligation. Write for Free Catalog.

CHICAGO WHEEL & MFG. CO.

Dept. P • 1101 West Monroe Street
Chicago 7, Illinois

Chicago, Ill. — Worthington Pump and Machinery Corporation. A. William Fraser, formerly general European manager, has been appointed midwest sales manager. He will direct the sales of Chicago, St. Paul, Kansas City and St. Louis offices, with headquarters here.

Beaver Falls, Pa.—The Babcock & Wilcox Tube Company. Alan W. Abegglen has been appointed to the sales force of this district sales office.

Denver, Colo.—The Babcock & Wilcox Tube Company. David W. Jones, Jr., has been appointed sales agent for the Rocky Mountain area. He is located here at 2600 Forest Avenue.

Linden, N. J. — Alloy Steel Products Company. Harold J. Bartlett has been appointed sales manager, with headquar-



Harold J. Bartlett

ters here. He was manager of alloy sales for the Crane Company for ten years prior to his present appointment, specializing in the development and sale of corrosion-resisting valves and fittings.

Los Angeles, Calif.—Turco Products, Inc. Dan T. Buist has succeeded Lou H. Moulton as national sales director. Joe Hart has been appointed manager of the company's metal processing sales division.

New York, N. Y.—Aluminum Company of America. Louis P. Favorite has been named manager of the district sales office here. He succeeds Edward B. Wilber, recently elected president of American Lumber & Treating Co.

Indianapolis, Ind. — E. C. Atkins and Company. Several changes have been made in the company's sales organization. As director of sales, K. W. Atkins has made the following appointments: Ray F. Ellis, assistant director of sales; Augustus Vogel, general sales manager of the industrial division; H. Waddle, general sales manager of the mill division; A. L. Martinson, general sales manager of the hardware division.

Philadelphia, Pa.—Dravo Corporation. Morris L. Hicks has been named manager of the district office here.

Long Island City, N. Y.—Steiner Plastics Mfg. Co., Inc. Robert B. Coombs has joined the sales force.

(Please turn to page 284)

Sawyer's

NEOPRENE LATEX PROTECTIVE WEAR

**SPLASH • SMEAR
& SOAKAGE PROOF**

complete PROTECTION AGAINST

ACIDS & ALKALIS • OILS & GREASES

highly resistant to

SCUFFING • SCRAPING • SNAGGING

stays FLEXIBLE when cold

does NOT get STICKY when hot

Sawyer's exclusive saturation-coating process ensures perfect bonding of 100% DuPont Neoprene Latex with top quality base fabric because it coats both sides and bonds right through the fabric.

You'll find Sawyer's Frog Brand industrial suits, coats and aprons the best buy on the market. Same styles in Rubberized or Oiled fabrics. Colors: Black or Yellow. Write for illustrated catalog.

The H. M. SAWYER & SON CO.
Cambridge 41, Mass.



MODERN CABLE DESIGN

CAN SAVE YOU MONEY...

But be sure it's been **proved** too

There have been a lot of new ideas in cable materials and methods over the years—some good, some bad. New ideas often have limitations as well as advantages. The cable which has the *best balance* between the modern and the time-tested, is your best buy.

With Okonite, you can be sure it's modern—and be sure it's *field-proved*, too. For Okonite has constantly maintained the initiative in introducing techniques and materials to the electrical cable industry. Okonite's ultra-modern research facilities are ever abreast of the newest developments, and in 72 years have pioneered countless technological improvements.

But Okonite does not—*will* not—offer a new idea to you until its worth has been proved beyond all question. A new development must survive months...and years...of every conceivable type of testing before it is built into any Okonite cable.

These are some of the "firsts" which have successfully weathered Okonite's proving ground tests, and the ultimate test of prolonged usage. And, what's more important, these developments have given you cables of greater reliability and wider

application to meet the complex and ever-increasing needs of the electrical industry.

FIRST—to introduce rubber-insulated power cable for 35,000-volt service (Okolite)

FIRST—to produce American shock-proof, high voltage rubber-insulated x-ray cables (Okolite)

FIRST—to use neoprene in cable sheathing (Okoprene)

FIRST—to develop (Okoseal) synthetic impervious sheath (PVC) for Navy shipboard cables, now used by the industry in many types of wire

FIRST—to use glass as a wire insulation—quickly adapted by electric motor manufacturers for magnet wire (Okoglass)

FIRST—to introduce high-pressure pipe type cable system for high voltage transmission circuits (Oilostatic)

FIRST—to use semi-conducting tape between conductor and insulation to prevent internal corona-cutting (Semicon Tape)

FIRST—to develop "line-tap" reverse-lay self-supporting aerial cable (Dualay)

FIRST—to introduce all-rubber underground cable (Okosheath)

FIRST—to introduce small diameter building wire to solve problem of rewiring raceways (Okoseal)

When you have a cable problem, ask your Okonite representative to help you choose the most effective cable to meet the job requirement or write directly to The Okonite Company, Passaic, N. J.



OKONITE



THE BEST CABLE IS YOUR BEST POLICY

insulated wires and cables

ALLEN O HEAD
PRESSUR-FORMING
GIVES A SCREW
EXTRA STRENGTH



... STRONGER
HEAD AND
STRONGER BODY



EXTRA
STRENGTH

FOR SPECIFY GENUINE ALLEN O HEAD SCREWS

The Allen Pressur-Forming Method is now used to produce nearly all standard Allen screws. Instead of weakening the metal by cutting the steel fibres, it compresses them for extra toughness.

IF YOU BUY FOR REPLACEMENT...

you'll buy less often if you are sure to get the extra strength Allen builds into precision fastenings.

IF YOU ARE DESIGNING OR IMPROVING A PRODUCT...

Allen technical development (available through Allen distributors or direct from the factory) leads the field. We work constantly with engineers of leading manufacturers toward the solution of problems involving fastenings and we invite your inquiry.



ASK HOE... There's no room for failure in the giant high speed presses that turn out America's newspapers — but there's room for thousands of space-saving Allen O Head screws in every Hoe press. This leading manufacturer standardizes on Allen O Head screws for dependability.

SOLD ONLY THROUGH LEADING DISTRIBUTORS

Write the factory direct for technical information and descriptive literature.



ALLEN 
MANUFACTURING COMPANY
Hartford 2, Connecticut, U. S. A.

New York, N. Y.—The Goodyear Tire & Rubber Company. A. E. Whitney has been named special representative. He will offer technical services to customers in the New England and Middle Atlantic states on Goodyear's Pliovic (vinyl) resins.

Minneapolis, Minn.—Kennametal Inc. A district office has been opened here in the Metropolitan Building. Harry Brandvik is the representative.

Bridgeport, Conn. — The Bullard Company. H. Edward Neale has been appointed assistant sales manager.

Troy, N. Y.—Behr-Manning Corporation. John M. Cook, former general sales manager, has been elected vice-president. He has also been named general manager of the abrasive division.

Schenectady, N. Y. — General Electric Company, Chemical Department. Clyde E. Albro has been appointed sales development supervisor for mica products.

Syracuse, N. Y.—Crucible Steel Company. A. H. Lewis, Jr. has been named manager of the Crucible branch here. H. B. West has been appointed sales engineer in this district.

Washington, D. C.—The Flintkote Company. The industrial products division has opened a new office here at 1625 I Street, N.W. Hayden A. Glatte heads the office.

Pittsburgh, Pa.—A. M. Byers Company. Buckley M. Byers, formerly assistant manager of the New York office and manager of export sales, has been named assistant manager of steel sales. A. B. Drastrup, manager of steel sales, has been given the additional position of assistant to the president.

INDUSTRIAL DEVELOPMENTS

Allied Products Corporation, Detroit, Mich., has acquired all the outstanding stock of Michigan Powdered Metal Products Company, Inc., Northville, Mich. The Northville company is now a wholly-owned subsidiary of Allied.

Mack Manufacturing Corporation, New York, N. Y., and the Wooldridge Manufacturing Company of Sunnyvale, Calif., have signed an agreement under which Wooldridge will partially produce and fully assemble Mack off-highway vehicles in its main Sunnyvale plant.

Westinghouse Electric Corporation, Pittsburgh, Pa., has announced the purchase of a 70-acre tract one mile south of Reform, in western Alabama. A one-story brick plant, with 150,000 sq. ft. of floor space will be erected. This will be the tenth Westinghouse lamp manufacturing site.

(Please turn to page 286)



When life hangs on a ray of light

What if the lights should fail! They *can* and *do* fail despite the utmost precaution of ever vigilant utility companies. Danger of lighting failure is avoided in many hospitals and other buildings that are safeguarded by Exide Emergency Lighting units. Instantly and automatically the units take over the lighting load when normal sources fail.

Where dependability is vital, you'll find Exide Batteries.

Exide Batteries provide motive

power for time-and-cost saving battery-electric industrial trucks, mine locomotives and shuttle cars. They supply battery power for railway car lighting, air-conditioning, Diesel locomotive

cranking and signal systems.

Exide Batteries serve every branch of industry. Many thousands are used by telephone and telegraph companies, radio and television stations, electric light and power companies. They are used on airplanes, ocean vessels, fishing craft . . . in fire alarm systems . . . for cranking Diesel-powered equipment. And on millions of cars, trucks, tractors and buses, they daily prove that "When It's an Exide, you START."

Exide

BATTERIES

"Exide" Reg. Trade-mark U.S. Pat. Off.

1888...DEPENDABLE BATTERIES FOR 63 YEARS...1951

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 2 • Exide Batteries of Canada, Limited, Toronto

We don't have to 'teach' our people how to use this extinguisher!



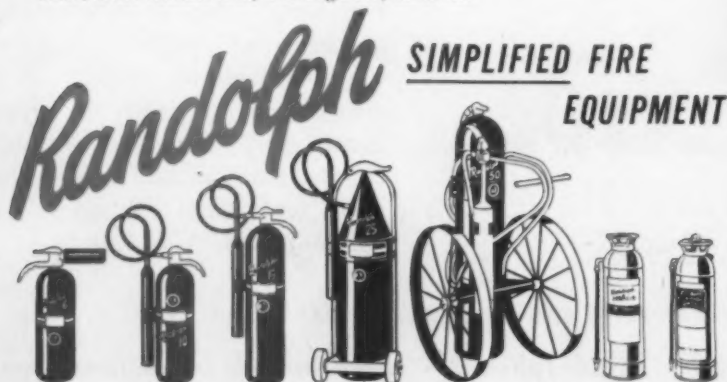
**IT'S A
RANDOLPH!**

One glance tells you just how the Randolph operates—no instructions, no explanations necessary! That's why *anybody* can get a Randolph into action fast! No valves to turn, no nozzles to adjust; just point and press your thumb and Randolph's cloud of snowy CO₂ kills fire instantly!

Non-damaging Randolph CO₂ evaporates without a trace, is non-toxic, won't conduct electricity, deteriorate or freeze. And *all* Randolph Models are Underwriters' Approved.

**A COMPLETE LINE OF EXTINGUISHERS
AND AUTOMATIC SYSTEMS**

Learn how Randolph gives your plant panic-proof, split-second protection against flammable liquid, electrical and other hard-to-handle fires! Write Randolph Laboratories, Inc., 1 E. Kinzie St., Chicago 11, Illinois.



Westinghouse Electric Corporation has announced plans for two new East Pittsburgh buildings that will increase by 65% the capacity to produce giant electric generators. The structures will provide more than 300,000 extra square feet for large generator production. This will make possible construction of larger than 150,000 kw high-speed, 3600 rpm generators.

Cadillac Stamp Company is now occupying a new and larger plant at 17315 Ryan Road, Detroit, Mich.

Aeroquip Corporation, Jackson, Mich., has purchased all the outstanding stock of Metalco, Inc., also of Jackson. The newly acquired company will be operated as a wholly owned subsidiary of Aeroquip.

Mutual Chemical Company of America, New York, N. Y., has completed a new chromium chemical plant on the Balti-



more harbor. It will increase the production of sodium bichromate and other essential chromium compounds.

Alexander Brothers Belting Company, a newly formed Pennsylvania corporation, has purchased Alexander Brothers, Philadelphia, Pa., and Charlotte Leather Belting Company, Charlotte, N. C. from Armour and Company. An exception is the Curried Leather Department, which will continue to be operated by Armour Leather Company, Division of Armour and Company.

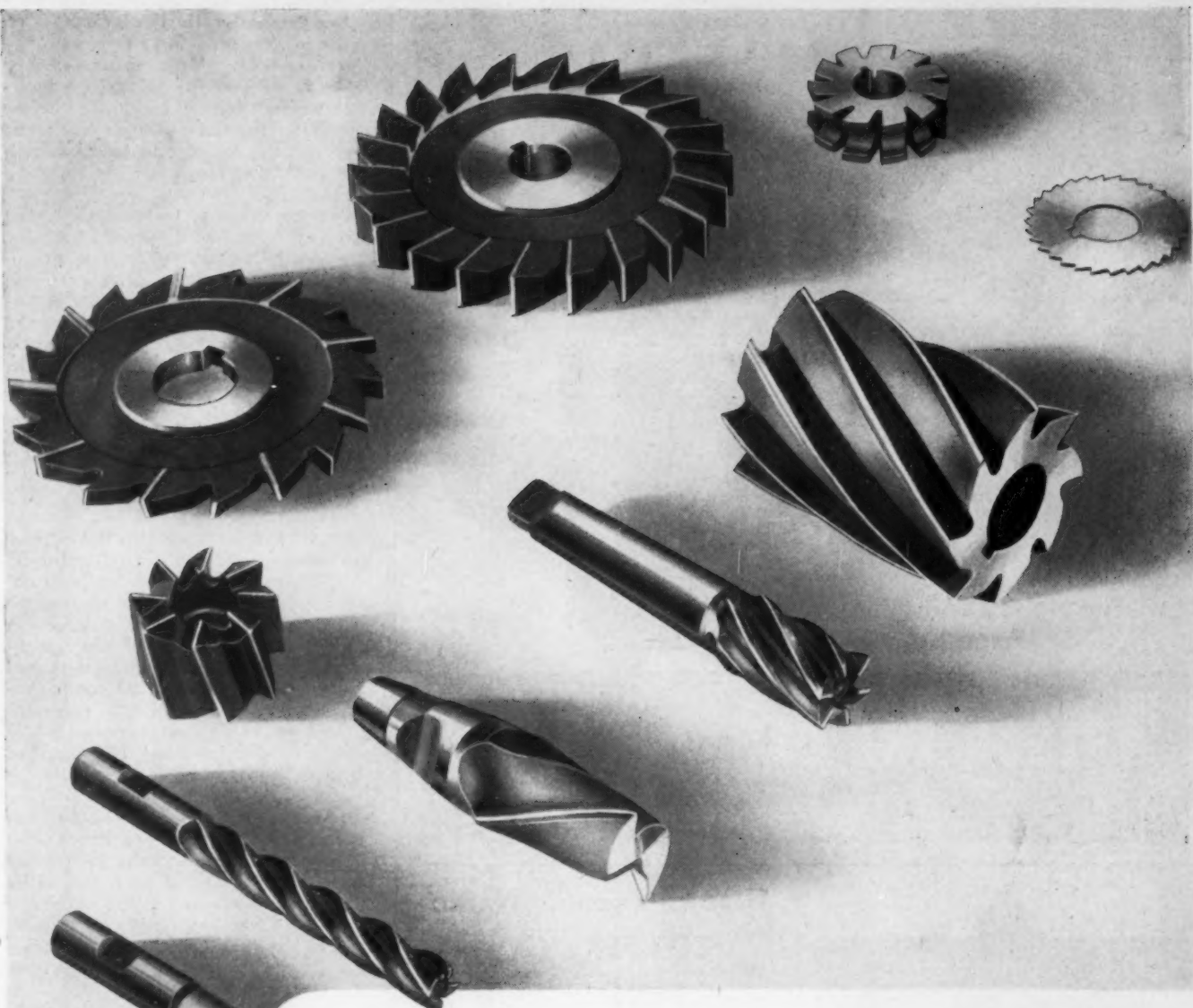
Vanadium Corporation of America will more than double its production of metallurgical chrome ore as a result of a recent purchase by its subsidiary. The subsidiary, Rhodesian Vanadium Corp., has bought properties in Southern Rhodesia, South Africa, the area in which the company has operated since 1926.

Gunk Atlantic, Inc., South Canal St., Lawrence, Mass. is a new company licensed by The Curran Corporation to manufacture and market Gunk self-emulsifying and self-scouring solvents throughout the entire eastern United States from Maine to Louisiana.

Lincoln Plastics Corporation, of Cambridge and Circleville, O., has entered the laminating and sheet forming plastics field. New facilities for these processes have been added to the Cambridge plant.

The Sessions Clock Company, Forestville, Conn., has purchased Tyniswitch, Inc., Middletown, Conn. The name will be changed to Tyniswitch Division of The Sessions Clock Company, with manufacturing facilities located in Forestville.

(Please turn to page 288)



You Can Select Faster, More Efficient PRODUCTION

from the broader range of Brown & Sharpe Cutters

The closer you match your cutters to each job, the faster, more efficiently they will cut . . . and the less power it will take.

Brown & Sharpe offers a complete range of cutters that permits accurate selection of exactly the right cutter for each cutting job! Styles include every type from plain milling cutters and end mills to metal slitting saws and cutters

for special uses. And every cutter is a *quality* product . . . designed and produced to fulfill the enduring accuracy that is built into today's milling machines.

Whenever you order cutters, specify Brown & Sharpe and be sure of getting maximum cutter productivity. Write for complete catalog. Brown & Sharpe Mfg. Co., Providence 1, R. I., U.S.A.

WE URGE BUYING THROUGH THE DISTRIBUTOR

Brown & Sharpe





TODAY, more than ever before, workers' welfare counts! One important instance is the installation of Halsey Taylor Coolers and Fountains at strategic locations throughout the plant, saving steps, reducing fatigue, keeping production at top peak! Get the facts

The Halsey W. Taylor Co.

Warren, Ohio



Halsey Taylor
Fountains and Coolers



Herbrand
PRECISION
DROP FORGINGS
... any size or shape
up to 200 lbs.

Whatever your requirements in forgings, Herbrand is your most faithful source of supply ... as it has been for hundreds of industries since 1881. Your inquiries are solicited.

Herbrand DIVISION
THE BINGHAM-HERBRAND CORP.
FREMONT, OHIO

HOBBS Famous Name COTTER PINS

LOXIT

The extended prong full round cotter pin in diameters $\frac{1}{8}$ " to $\frac{3}{8}$ " and lengths $\frac{1}{2}$ " to 4".

HOBLOK

The famous "Whammit—Dammit!" machine set cotter pin. In most standard sizes.

In Steel, Stainless Steel, Monel, Brass and Aluminum. Meets all AN specifications for Cotter Pins.



HOBBS
MANUFACTURING CO.

EST. 1882 10 Salisbury St., Worcester 5, Mass.

Manufacturers of:

Tangle-Proof, the precision made Lock Washer

Plax Corporation, Hartford, Conn., is re-activating its specialized fabricating services on thermoplastic materials. The move is designed to aid manufacturers with military contracts involving the use of polystyrene. The company's fabricating department is equipped to handle specialized machining operations.

Carboloy Company, Inc., world's largest producer of cemented tungsten carbides, has launched a \$2,800,000 plant expansion program to meet rapidly increasing demand. Present Carboloy plants in Detroit, Mich. are being expanded, and \$2,000,000 will be devoted to constructing and equipping a new plant in Edmore, Mich.

Donald Marks Steel Company, 3685 Lynfield Rd., Cleveland, O., has been established as steel broker with warehouse facilities.

The **TDA Brake Division**, The Timken-Detroit Axle Company, Ashtabula, O., has launched a major expansion of its industrial brake manufacturing. Extensive research and engineering work have been done on a wide variety of industrial brake applications, plus exhaustive field tests and studies, at the division's plant and laboratory. The division is said to be thoroughly equipped to supply brakes specifically engineered for industrial equipment of all kinds.

Joseph T. Ryerson & Son, Inc., has announced an expansion program at the St. Louis plant. It includes reconstruction and new layout of present facilities and construction of additional warehouse space totalling approximately 50,000 square feet. Total warehouse and office space of the enlarged plant will be about 161,000 square feet.

Babcock & Wilcox Tube Company, Beaver Falls, Pa., has constructed a new air-conditioned building devoted exclusively to the inspection, marking, packaging and loading for shipment of stainless tubing. It is located at the company's East Works Department. Its numerous features are said to offer better service for users, fabricators and distributors of B&W stainless tubing, as well as improved conditions for the company's personnel.

Missile Valve Company, Los Angeles 34, Calif., is the name of a new development and manufacturing company specializing in valve assemblies.

Kalex Corporation, 305 East 46th St., New York, N. Y., has been appointed exclusive distributor in U. S. for Cary of Switzerland, makers of high precision gages.

Republic Plating & Processing Co., Chicago, Ill., is converting its plant facilities to process aluminum through sulphuric and chromic acid anodizing. The anodizing process will be available exclusively to firms engaged in defense production.

(Please turn to page 290)

*We'll Accept Your Order
for*

COPPER ROTATING BANDS

We are equipped to make sizes up thru 155 MM

These rotating bands—made of Wolverine seamless tube—either all copper or 90-10 gilding metal—are produced under most exacting specifications—they are quality-controlled from ore to finished product.

You are invited to draw on the facilities offered by our Customer Engineering Service for any help you need regarding this type of material—including any assistance you may require in seating blanks.

Wolverine engineers have conducted considerable research in the development and production of rotating bands and stand ready to assist you at all times.



WOLVERINE TUBE DIVISION

Calumet & Hecla Consolidated Copper Company
INCORPORATED

Manufacturers of seamless, non-ferrous tubing
1463 CENTRAL AVENUE • DETROIT 9, MICHIGAN

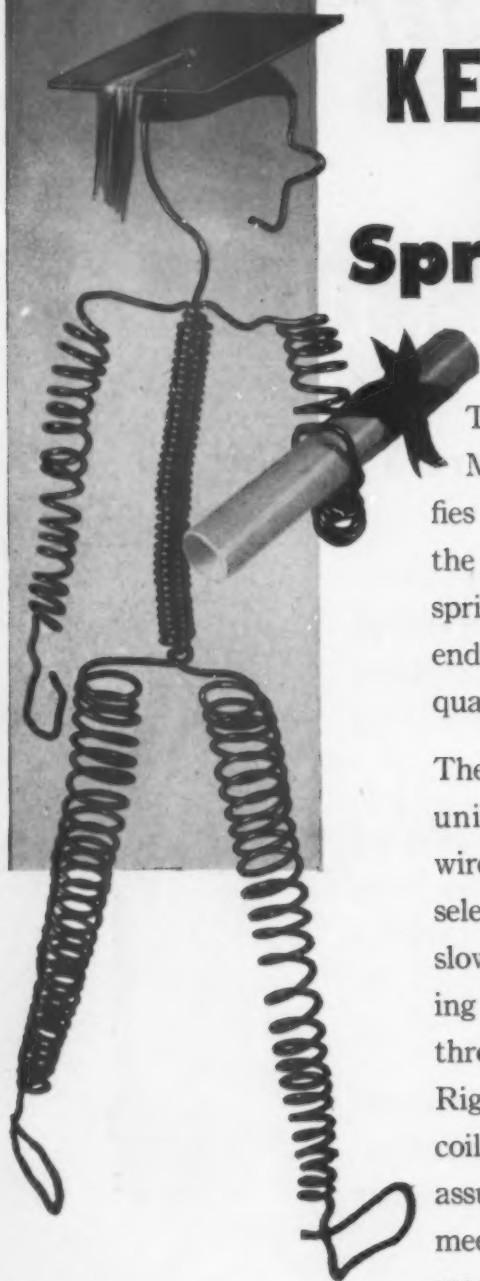


PLANTS IN DETROIT AND DECATUR, ALA.
Sales Offices in Principal Cities

Export Department, 13 E. 40th St., New York 16, N. Y.

... high honors for

UNIFORMITY KEYSTONE MUSIC Spring Wire



The uniformity of Keystone Music Spring Wire simplifies production problems in the manufacture of intricate springs and parts . . . assures end products of the highest quality.

The structural soundness and uniformity of this quality wire is attained by careful selection of raw materials, slow and meticulous processing and constant examination throughout its manufacture. Rigid final inspections include coiling, torsion and bend tests assuring the right quality to meet your exacting requirements.

If your products require any type of "special" steel wire, please consult us.



Joseph T. Ryerson & Son, Inc., which operates steel warehouses in 13 cities over the country, has been appointed exclusive warehouse distributor of Rockrite tubing, manufactured by Tube Reducing Corp., Wallington, N. J. The tubing is manufactured by a special cold sizing process.

The Rockwell Manufacturing Company, Pittsburgh, Pa., will build a new 150,000 sq. ft. manufacturing plant in Tupelo, Miss.

Independent Pneumatic Tool Company, Aurora, Ill., has purchased the Armstrong-Whitworth and Company, Pneumatic Tools, Ltd., Gateshead-on-Tyne, England. Armstrong-Whitworth for nearly a century has been one of the largest and most prominent of British industries.

Sealol Corporation, Providence, R. I., manufacturer of mechanical seals for rotating shafts, has formed a subsidiary company, Sealol Manufacturing Co., located in Keene, N. H., to increase its productive capacity.

Harper Electric Furnace Corporation, formerly located in Niagara Falls, N. Y., has moved its offices and plant to new and larger quarters at 39 River Street, Buffalo, N. Y.

Diamond Magnesium Corporation, a subsidiary of Diamond Alkali Corporation will operate a plant at Painesville, O., to be rehabilitated under a government contract by the H. K. Ferguson Company. The plant, constructed originally for defense production in 1941, will produce magnesium by the electrolytic process. The project is to be completed and the plant in production during April. During the next two years it will produce approximately 72,000,000 pounds of magnesium.

MOVE TO INCREASE MATERIALS SUPPLY FOR RATED ORDERS

Deliveries of some defense items have been delayed by material shortages according to reports reaching the Department of Defense. Among the items reported as being delayed by shortages are M-46 tanks, 57mm shells, tank tracks, rockets, tactical trucks, tanker and destroyer escort conversions, alloy pistons and dies. Principal shortages are being experienced in steel, aluminum, and zinc.

In an effort to correct the situation and speed up delivery of vital weapons, Munitions Board Chairman John D. Small has requested the NPA Administrator to remove all provisions in mobilization orders which limit the required acceptance of DO ratings.

In a move to increase the materials supply for rated orders, NPA has raised the required limit of acceptance for steel and aluminum. NPA's purpose in prescribing limits on required acceptance has been to effect a distribution of defense orders among all the producers in order to prevent overloading of a few.
(Please turn to page 292)



25 HP, vertical, explosion proof, double reduction gearmotors make compact, safe, economical drives for these mixers.

Don't be satisfied with "good enough" because too often good enough means mediocre. And if the "good enough attitude" becomes too much of a habit it can wreck the future of a man or a company.

Don't put up with "good enough," makeshift assemblies for your power drives when it's so easy to get the RIGHT horsepower, the RIGHT shaft speed, the RIGHT construction features, the RIGHT mounting . . . all combined into one compact power package.

Master Motors, available in thousands and thousands of types and ratings (up to 150 HP), give you an enormous selection of units designed so that they easily combine to give you a power drive that will add greatly to the compactness, safety and economy of each job.

make them better than

**GOOD
ENOUGH**

Open, enclosed, splash proof, fan cooled, explosion proof . . . horizontal or vertical . . . for all phases, voltages and frequencies . . . in single speed, multi-speed and variable speed types . . . with or without flanges or other special features . . . with 5 types of gear reduction up to 432 to 1 ratio . . . with electric brakes . . . with mechanical variable speed units . . . and for every type of mounting . . . Master has them all and so can be completely impartial in helping you select the one best motor drive for YOU.

Select the RIGHT power drive from Master's broad line and you can increase the saleability of your motor driven products . . . improve the economy and productivity of your plant equipment.

THE MASTER ELECTRIC COMPANY • DAYTON 1, OHIO

BAY STATE TAPS

FAVORED THROUGHOUT INDUSTRY

BAY STATE TAP & DIE CO.
MANSFIELD, MASS.

On Nearby Shelves of Industrial Supply Distributors

1951 CANADIAN TRADE FAIR WIDENS INDUSTRIAL SECTION

Product information so far available strongly indicates that the 1951 Canadian International Trade Fair will be bigger and more comprehensive than ever before. The industrial goods sections in particular are expected to surpass past years both in size and range of products. The fair will be held in Toronto from May 28 to June 8.

Many new firms and even new countries will be represented in most of the classifications containing products of interest to manufacturers, and a number of past exhibitors in this category have taken more space than before. The British Machine Tool group, for instance, has booked about 30,000 square feet of space—5,000 square feet more than last year. Besides the machine tool group, seven separate British trade associations have taken blocks of space to exhibit a wide range of machine tools, mechanical handling equipment, printing machinery, scientific instruments and related products.

Canadian producers are also making a better showing this year. It appears that the 22,000 square feet used in 1950 to show Canadian-produced capital goods will be exceeded in this year's Fair. About 15,000 square feet is so far booked firm by Canadian exhibitors in the industrial category.

The products and materials so far registered cover an extraordinarily wide range of industrial production. Plant equipment from delicate hand tools to mammoth power presses will be displayed for careful appraisal of business executives and technical experts interested in finding the most efficient and economical equipment to bolster production already affected to some extent by shortages and restrictions.

1 1 1

AF POOL OF MACHINE TOOLS AVAILABLE ON LOAN BASIS

Defense production speed-up resulting from the Air Force machine tool storage plan will shorten time between first contract and first production model plane by as much as 18 months. An Air Force pool of 40,000 machine tools, assembled after WW II as one phase of the Joint Army-Navy Machine Tool Program, is now being made available to contractors on a loan basis, thus enabling them to get into production in a few months instead of having to order and wait delivery of new tools. Such tools, bought up by RFC, turned over to WAA and finally acquired by AF, are valued at \$400,000,000, will remain government property while in the industry, and will be returned to Air Force custody upon termination of contracts involving their use for defense production. Further information is available from Technical News Letter, Department of Defense, Office of Public Information, Room 2c-765, Pentagon, Washington, D. C.

(Please turn to page 294)



The Symbol of Quality...

in **ELECTRIC
FURNACE
STEELS**

Hot Rolled • Forged • Annealed • Heat Treated
Normalized • Straightened • Cold Drawn
Machine Turned • Centerless Ground

COPPERWELD STEEL COMPANY
WARREN, OHIO

117 Liberty Street
New York, New York

1578 Union Commerce Bldg.
Cleveland, Ohio

528 Fisher Building
Detroit, Michigan

176 W. Adams Street
Chicago, Illinois

7251 General Motors Bldg.
Detroit, Michigan

3104 Smith Tower
Seattle, Washington

P.O. Box 1633
Tulsa, Oklahoma

403 W. Eighth Street
Los Angeles 14, Calif.

Monadnock Building
San Francisco 5, Calif.

4004 Navigation Blvd.
Houston 3, Texas

IT'S BETTER TO USE THE BEST!



**STANDARD
STRUCTURAL ALLOY**

BEARING QUALITY

ALLOY TOOL

SPECIALTY

NITRALLOY

CARBON TOOL

**MAGNAFLUX-AIRCRAFT
QUALITY**

more
than **80** **OAKITE**
CLEANING
MATERIALS
to help speed your production

Short of skilled help? Here's one way to solve that problem. On your production cleaning operations, call in your local Oakite Technical Service Representative. He's skilled in the art of cutting corners on such jobs as:

- Prepaint treatment
- Barrel cleaning
- Paint stripping
- Rust prevention
- Electrocleaning
- Burnishing
- Pickling
- Tank cleaning

D. O. Subcontractors! Send for FREE Booklet "Some Good Things to Know About Metal Cleaning." Oakite Products, Inc., 54 Thames St., New York 6, N. Y. No obligation.

OAKITE

SPECIALIZED INDUSTRIAL CLEANING MATERIALS • METHODS • SERVICE
Technical Service Representatives in Principal Cities of U. S. & Canada

**THIS SQUIRT
LOOSENS-**



FROZEN BOLTS. . . BEARINGS

It's fast and accurate—shoots 15 feet—a drop or a squirt. It's labeled Kroll—so you can grab it quickly when a frozen bolt, screw or bearing starts to cost expensive time or threaten production.

That is when Kroll creeps into millionth inch spaces to soften rust, dissolve gum and supply lubrication to loosen the parts. It's fast and it's positive.

"Kano Kroll always opens up the tight fitting covers on fire extinguishers for us. It is truly a wonderful preparation. We have found such covers we could not force off with a blow of a hammer. Several minutes' seepage of Kroll did the trick," so says a service organization for fire extinguishers.

Krollers are priced at \$1.50 each and are well worth it. As an inducement to try Kroll we offer the combination of one Kroller and one gallon of Kroll—(listed at \$3.50) for \$4.75, f.o.b. factory.

If you are not one of the 8,500 industrial plants already using Kroll, send for a gallon on the proposition that it will loosen the most stubborn frozen part or you get your money back.

KANO LABORATORIES
1083 Thompson Lane, Nashville, Tenn.

Over 85% of the torque wrenches
used in industry are

STURTEVANT
TORQUE WRENCHES

Read by Sight, Sound or Feel.

- Permanently Accurate
- Practically Indestructible
- Faster—Easier to Use
- Automatic Release
- All Capacities

in inch ounces . . . inch
pounds . . . foot pounds
All Sizes from 0-6000
ft. lbs.)



Every
manufacturer,
design and
production man
should have
this valuable
data. Sent upon
request.

PA **STURTEVANT CO**
ADDISON [QUALITY] ILLINOIS

**GREATER USE OF CARBIDE
URGED FOR SAVINGS**

The nation's tool engineers should use carbide cutting tools rather than steel tools wherever possible in the manufacture of defense or civilian products, according to Thomas Badger, of the Headquarters Manufacturing Engineering Laboratory, Westinghouse Electric Corp., Pittsburgh. Mr. Badger made this recommendation in outlining his company's own tool selection procedure at the recent annual meeting of the American Society of Tool Engineers. The paper was part of a program of the "men with production know-how" to disseminate vital technical data.

High speed steel tools are still most widely used, Mr. Badger said, but are rapidly being replaced by carbides to cut production time and conserve plant space, machines, and manpower. Where carbides do not promise good results in an application, it is a good idea to try cast alloy tools before switching back to high-speed, he indicated.

Under average shop conditions however, Mr. Badger said, carbide tools will reduce cutting time by 40 to over 80%. For the same tool life, speeds eight times as high or more can be used, he said.

**NEW BOOK ON
DIE CASTING**

"Die Casting" is the title of new book by H. H. Doehler, pioneer in the die casting field who designed the first practical die casting machine, which provides an authentic and thorough analysis and survey of the entire die casting process.

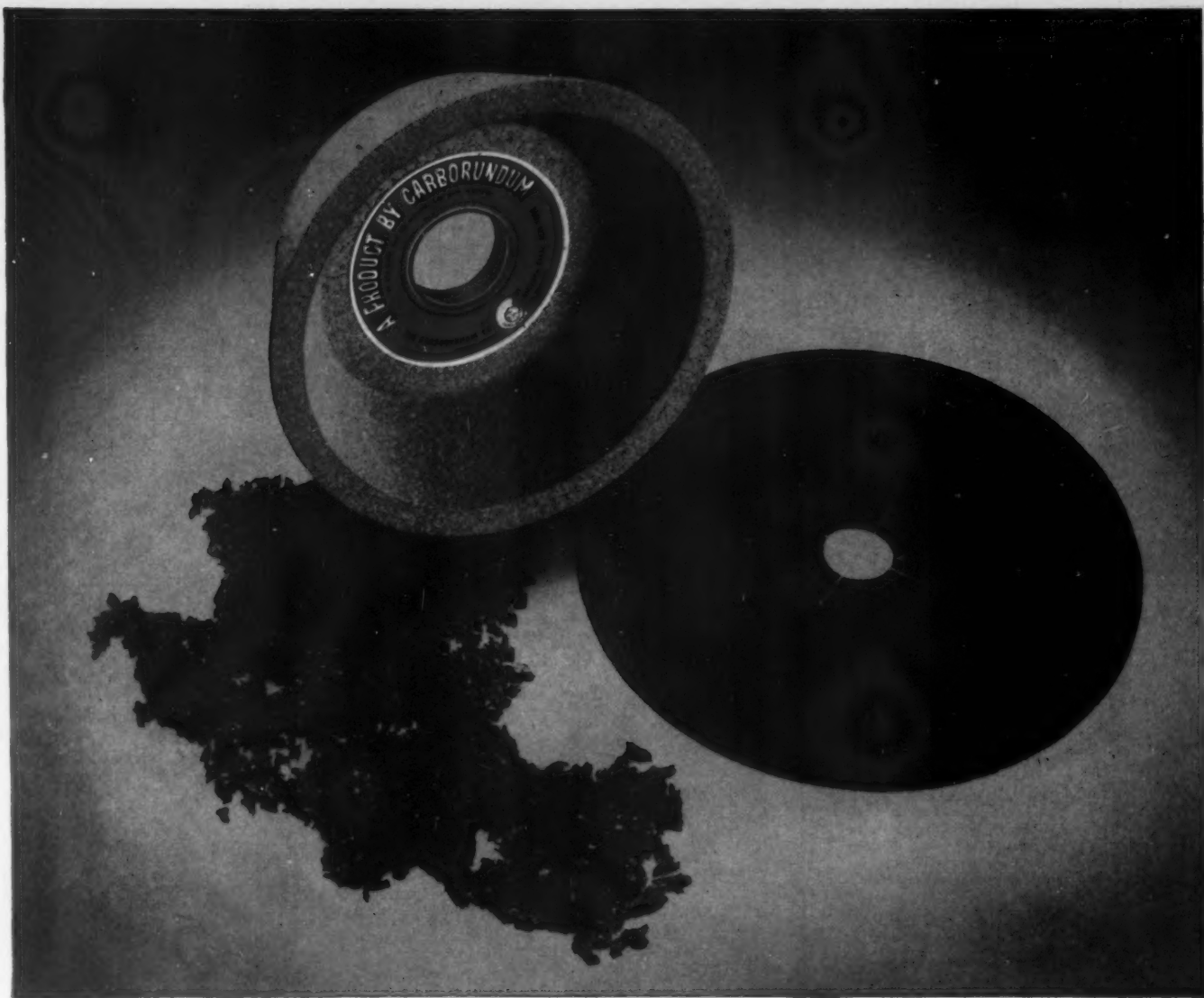
The book presents a clear picture of the virtually unlimited possibilities of die casting as a fabricating technique. It discusses the production, engineering, design and materials of die casting, and points out probable trends and developments in the future. It provides production data on hydraulcope analysis of injection processes, automatic ladling, die selection and die manufacturing, and other phases of die casting that never before have received full coverage. The text includes discussions on common practices for machining and hobbing dies, metallurgical control of die steels, and the heat treatment of dies. Also included are practical data on the cause and cure of erosion, heat checks, cracking, and wear of die steels.

Special features includes a practical discussion of the economic design of die castings, how to estimate die casting costs, and what to include on drawings of parts to be cast. Multiple-cavity dies and unitized die construction, as well as simple, single-cavity units, are all treated in detail.

Mr. Doehler founded the Doehler Die Casting Company in 1908, and was its chief executive for 36 years. Since 1944 he has been chairman of the board of directors.

The price of Die Casting is \$8.00. It is published by McGraw Hill, Book Information Service, 327 West 41st Street, New York, N. Y.

(Please turn to page 296)



Which would you use?

Abrasive wheel, belt or grain—which would you use on any specific metalworking operation? The choice, of course, depends on the material to be removed, desired finish, cost factor and other variables.

Equally important it depends on *improvements in abrasive products and methods* which can make a change to a different type of abrasive advantageous for particular applications.

That's why it pays to standardize on a brand

name covering all types of abrasives, from which impartial recommendation of the proper one can be made. Only CARBORUNDUM offers that advantage: a *complete* line of abrasive products from which you can obtain the one best suited to individual job requirements, in every case.

Get the most in production efficiency and economy—by specifying abrasives from the *complete* CARBORUNDUM line.

Only **CARBORUNDUM**

TRADE MARK

makes **ALL** Abrasive Products...to give you the proper **ONE**

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company, Niagara Falls, N. Y.

80-16

PRECISION MADE

Theoll

SCREWS, BOLTS, NUTS and
SPECIAL FASTENERS

save assembly time
improve product strength
and final appearance



ACCURATE THREADING SAVES TIME

Pheoll Screws, Bolts, and Nuts are easier to start, easier to drive and easier to tighten—because they're accurately machined and threaded. These features cut your assembly time and cost.

COLD ROLLED THREADING ADDS STRENGTH

The grain structure and flow of metal obtained through cold heading and roll threading increases the structural strength of Pheoll Fasteners. Cold working improves thread bearing surfaces, providing greater area of contact for firmer grip. Greater strength reduces possibility of shearing, and time lost in subsequent removal and re-tapping.

OUR INSPECTION IMPROVES YOUR PRODUCT APPEARANCE

Step by step Pheoll inspection, through every process of production, assures uniform head size and shape; cleanly milled and recessed heads, neat chamfering and counter-sinking. All these factors contribute to the quality and finish which add materially to your product's final appearance. Write for Pheoll's product literature and price list.

THESE PHEOLL PRODUCTS INCREASE YOUR PRODUCTION RATE. Thumb Screws Machine Screws† • Wood Screws† • Sheet Metal Screws† • Stove Bolts† • Rolled Threaded Wires and Studs • Special Rivets and Pins • Brass Washers

†Furnished in slotted and Phillips Recessed Head Types



N. P. A. Publishes List of Defense Order Symbols Used in Mobilization Program

Listed below is the list of DO symbols used at the present time in rating orders for production under the mobilization program. It was made public recently by the National Production Authority.

The agency pointed out that the DO-rating systems is a single-rating band, and N.P.A. regulations require that all DO-rated orders be filled in advance of

non-rated orders. The two-digit numbers assigned to the ratings are purely for the purposes of identifying the program to which the order is related, or the claimant agency. N.P.A. emphasizes that they do not indicate any preference. Rated orders are to be accepted in the order in which they are received.

Code numbers assigned to various programs, are as follows:

DO Code No.	Agency Programs	Major Program Involved
01	Department of Defense	Aircraft
02	" " "	Guided Missiles
03	" " "	Ships
04	" " "	Tank-Automotive
05	" " "	Weapons
06	" " "	Ammunition
07	" " "	Electronics and Communications Equipment
08	" " "	Fuels and Lubricants
09	" " "	Clothing and Equipage
10	" " "	Transportation Equipment
11	" " "	Building Supplies and Equipment for Overseas Construction
12	" " "	Subsistence
19	" " "	Production Equipment
21	" " "	Miscellaneous
22	" " "	Contract Construction
35	Economic Cooperation Adm.	Foreign Additional Military Production
36	" " "	Foreign non-Military Production
37	Office of International Trade	Foreign production (other than E.C.A Military)
40	Atomic Energy Commission	Operations
41	" " "	Construction
42	" " "	Construction Equipment
43	" " "	Privately Owned Complete Facilities
44	" " "	Privately Owned Facilities Additions
45	N.P.A., Civil Aeronautics Adm., and Natl. Advisory Committee for Aeronautics	Miscellaneous
46	N.P.A.	Industry Plant Expansion
47	"	All Canadian Programs
48	Department of Interior	All Programs
49	Department of State	Voice of America
60	U. S. Coast Guard	Miscellaneous
61	" " "	Aircraft
62	" " "	Construction
63	" " "	Ships
97	N.P.A. (or delegatee)	M.R.O. Supplies
98	N.P.A. (or delegatee)	Production Equipment for Certain Private Contractors
99	N.P.A. (or delegatee)	Basketing (Small orders bunched together under N.P.A. Reg. 2)

1 1 1

Plastic Laminate Features Unusual Strength and Serviceability

Announcement of the perfection of a glass fiber polyester laminate and fiber-glass reinforced sheet having high resistance to moisture, assured the Air Force of a plastic virtually equivalent to lightweight steel in strength and serviceability. At the same time, this development was said to aid manufacturers in making available a substitute for aluminum and light steel in various civilian items.

Credit for the basic research and development was given to the Materials Laboratory, engineering division of the Air Materiel Command, U. S. Air Force,

Wright Field, Dayton, Ohio, in a paper read by L. L. Yaeger of Bjorksten Research Laboratories at session of the Society of the Plastics Industry, meeting at the Edgewater Beach Hotel, Chicago. Cooperating in the development were: Bjorksten Laboratories, Pittsburgh Plate Glass Co., Monsanto Chemical Co., Glass Fibers, Inc., Owens-Corning Fiberglass Corp., Libbey-Owens-Ford Glass Co., and American Cyanamid Co.

As outlined by Yaeger, the new glass fiber reinforced polyester plastic was primarily developed in cooperation with (Please turn to page 298)



This man means business for you!

He's a Kaiser Aluminum consulting engineer—a specialist ready to give you technical assistance on any design or production problem involving aluminum.

He may be able to save you money, or improve your product, by suggesting: 1) alteration of product designs; 2) changes in fabrication techniques; or 3) a switch in aluminum alloys. This service is *especially* helpful if you've never used aluminum.

His service is free—no matter what your products are, and whatever form of aluminum you use. And when you need help *immediately*, a skilled Kaiser Alumi-

num consulting engineer is within short travel time from your desk or your plant.

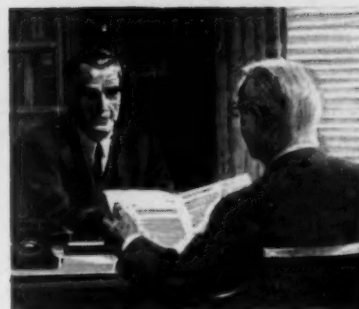
His service is more important now than ever. For with only limited amounts of aluminum available, your supplies must be used as efficiently as possible. It's a vital material in hundreds of products essential to the nation's preparedness program.

To help speed this program, we are operating our plants at maximum capacity. And we are vastly expanding our facilities to turn out more primary aluminum. As soon as possible our increased production will be shared by everyone.

Kaiser Aluminum

Setting the pace . . . through quality and service

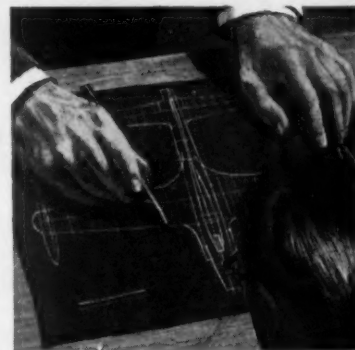
SOLD BY KAISER ALUMINUM & CHEMICAL SALES, INC., KAISER BUILDING, OAKLAND 12, CALIFORNIA
OFFICES IN: Atlanta • Boston • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit
 Houston • Indianapolis • Kansas City • Los Angeles • Milwaukee • Minneapolis • New York
 Oakland • Philadelphia • Portland, Ore. • Rochester, N. Y. • Seattle • Spokane • St. Louis
 Wichita • **EXPORT OFFICE, OAKLAND, CALIF. • WAREHOUSE DISTRIBUTORS IN PRINCIPAL CITIES**



WORKING ACROSS the desk from you and your product engineers, the Kaiser Aluminum consulting engineer can give you valuable assistance in product design and development.



ON YOUR production lines, the Kaiser Aluminum consulting engineer is an analyst who can suggest changes in alloy, temper, die design, or improvement in fabricating or finishing methods.



HIS HELP is equally valuable today for Defense Orders you have or are bidding on, or for development of products for future civilian markets.



KAISER ALUMINUM consulting engineers operate from strategically located offices—just a short time away from you, no matter what your location. Call any office listed at the left for lightning-fast service!

SUPERIOR

in more
than name

To make every gray iron casting meet your exact specifications is the aim of Superior Foundry's complete staff of production casting experts. Such high standards require organization, experience, modern equipment and never-ceasing "Quality Control."



This Tractor Transmission Case is used in rugged applications and we successfully met exacting requirements as to uniform material structure, close dimensional tolerance and fine finish.

...here is the modern equipment behind every Superior Gray Iron Production Casting



Complete Electric Furnace Process



Continuous Drying Ovens



Complete Metallurgical Control



High Speed Continuous Mold Conveyors

THESE are just a few of the modern facilities that enable Superior to produce castings ranging from 1/2 lb. to 1200 lb. in any quantity and to your particular specifications. Whether you want straight cupola gray iron or electric furnace iron castings with or

without alloys, you'll discover that Superior Foundry's complete metallurgical control assures uniform grain structure, adherence to your specifications and a clean, smooth finish. Bring your production casting problems to us today.

SUPERIOR FOUNDRY, INC.

3542 EAST 71st STREET • CLEVELAND 5, OHIO

Member of: Gray Iron Research Institute • Gray Iron Founders Society

VUlcAn 3-8000



(Continued from page 296)

the Air Force for structural parts of military planes. Laminates, moldings and reinforced sheets made of glass fiber and plastics have been used since World War II because of their high strength, low weight and ease of fabrication, Yaeger indicated. A relatively light weight sheet of plastic laminated glass cloth, for example, has remarkable properties of stopping a bullet even at close range.

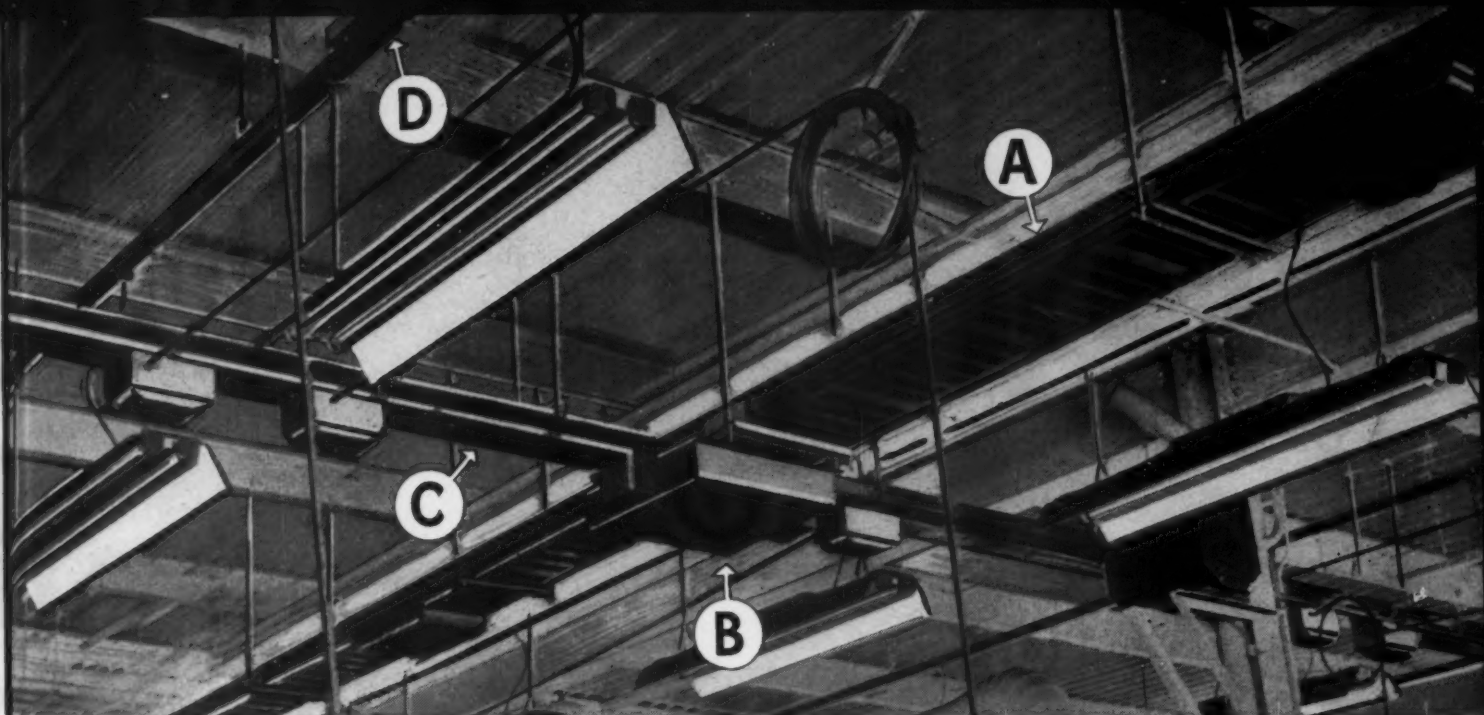
"But the utility of these laminates and sheets in the past has been greatly limited by the fact that their mechanical strength properties can be radically impaired on exposure to water and high humidities," Yaeger said. They would lose about 50 per cent of their flexural strength on immersion in water or exposure to high humidities for any lengthy period. This limited their use to indoor and covered areas. Responsible for this weakness was the fact that chemists were unable "to marry" the glass fibers to the plastic. In the same sense that chewing gum does not really adhere well to a window pane, the "marriage" between the glass fibers and the plastics could always be weakened when sufficient water was introduced.

After prolonged research, it was found that this trouble can be eliminated by the use of an "ambidextrous" molecule, i.e., a molecule which holds the glass fiber with one hand and clutches the plastic with the other hand. By coating the glass fibers with a compound (vinyl chloro silane) and then treating with water, the glass fibers were "married" to the silicon part of the compound, while the plastic could then be "locked" to the vinyl part of the compound. When this was done, the Air Force researchers at Wright Field found that the action of water was virtually without effect in reducing the bond between the plastic and the glass fibers. Repeated tests by immersion in water for 30 days, or by boiling for hours, established the point.

Civilian manufacturers, since World War II, have been interested in these glass-fiber reinforced plastics, Yaeger disclosed, because of the possibility of using them in place of thin steel where the full strength of steel is not absolutely essential—i.e., for refrigerator cases, ice-boxes, electric stoves, washing machines, automobile tops, gymnasium lockers, filing cabinets, etc. In these uses, Yaeger indicated, the glass fiber reinforced plastic is virtually equivalent to sheet steel in serviceability and on a weight and area basis it has greater structural strength than steel. Weight saving, he also pointed out, meant considerable savings on labor and transportation costs. Weakness of these plastics in the prolonged presence of water was a handicap, but now fortunately overcome with this new treatment.

As suggested by Yaeger, not only can the new glass fiber reinforced polyester plastic be used where light-weight steel is needed, but also for boats, fishing rods, office filing equipment, cases for typewriters outdoor advertising signs, metal specialties, caskets, household appliances, and in a whole variety of building items

(Please turn to page 300)



MAIN FEEDER AT SEALED POWER CORP. Trumbull LVD FLEX-A-POWER high-capacity feeder (A) distributes power through plant with minimum voltage loss. Can be dismantled, relocated with

complete salvability. Tap box (B) takes off power for FVK secondary feeders (C). 600-4000 amperes. LTG (D)—see below—is used for lighting. Bulletin TEB-1.

SECTIONALIZED POWER FEED

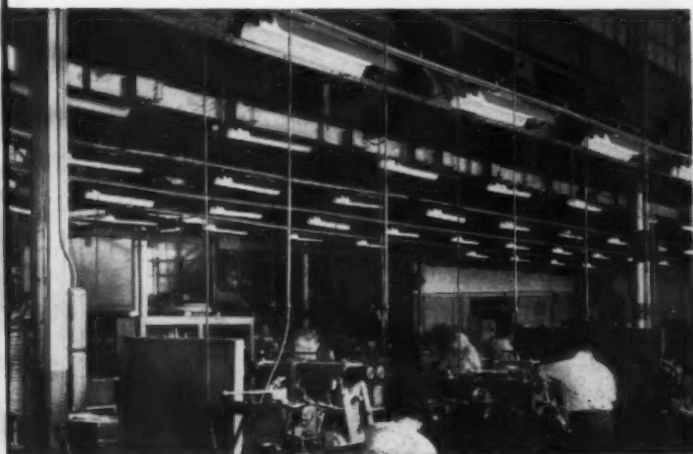
is ready for quick conversion

No plant... few buildings... can foretell what its power requirements will be months—or days—ahead.

But with FLEX-A-POWER® handling the electric power distribution from main switch or breaker to machine or lamp... any new requirement, additional load or rearrangement of load, can be easily met.

This system of standard-section busways gives utmost flexibility in power take-off, and, if necessary, can be taken apart for quick relocation. Easier to install than wiring and conduit—and more economical—it is ideal for a period when emergencies may develop, when conversion may be necessary.

Write us for literature on the types that interest you.



SECONDARY FEEDER AT PESCO PRODUCTS Division of BORG-WARNER CORP. Nearly $\frac{3}{4}$ -mile of 600 amperes, 440 volt Trumbull FVK FLEX-A-POWER takes power from a panelboard in parallel runs over entire area. 15 outlets to each 10-ft. section. No expensive rewiring needed when relocating loads. Can also be easily dismantled and re-installed. 225-1000 amperes. Bulletin TEB-4.



LIGHT-DUTY BUSWAY AT PESCO PRODUCTS Division of BORG-WARNER CORP. Use of LTG FLEX-A-POWER to distribute power to tools and lighting fixtures permits quick changes in machine layout without delay for rewiring. Busway can be tapped at any point by plug or trolley—every inch an outlet. Rated 50 amperes. Bulletin TEB-2.

TRUMBULL ELECTRIC

THE TRUMBULL ELECTRIC MANUFACTURING COMPANY, Plainville, Conn.



WRITE FOR INDUSTRIAL CATALOG

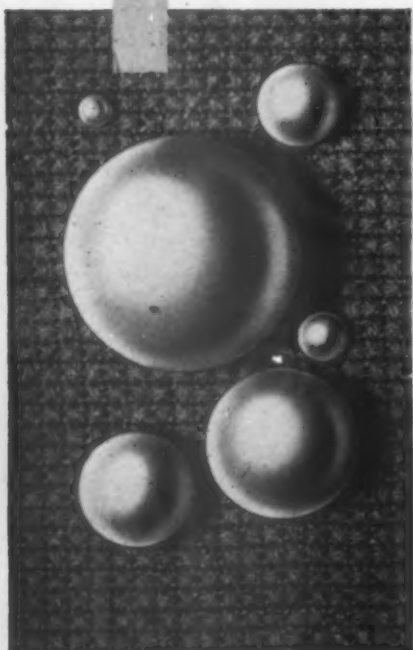
INDUSTRIAL RUBBER PRODUCTS

Solid, hard or sponge rubber parts molded to customers specifications from natural, synthetic and reclaimed rubber

Davidson RUBBER COMPANY

BRIGHTON STREET Department 4 BOSTON 29, MASS.

IN Size and Spherical Accuracy
Perfection of Surface
Uniformity—Dependable Physical Quality



NOT A BETTER BALL MADE..

And the service results from every Strom metal ball prove it—not only in the finest precision ball bearings but also in the lot of other ball applications where Strom balls are doing the job better.

Strom has been making precision metal balls for over 25 years for all industry and can be a big help to you in selecting the right ball for any of your requirements. In size and spherical accuracy, perfection of surface, uniformity, and dependable physical quality, there's not a better ball made.

Strom STEEL BALL CO.
1850 So. 54th Ave., Cicero 50, Illinois

Largest Independent and Exclusive Metal Ball Manufacturer

(Continued from page 298)

such as sidings, floors, walls, window sashes, venetian blinds, builders' hardware, enamelware, playroom furniture, as well as packing cases and boxes, baby carriages, etc.

Says Yaeger's report: "There are no critical materials involved in this vinyl chloro silane treatment, which has been carried out repeatedly at the laboratory of the Air Force at Wright Field, U. S. Dept. of Agriculture Forest Products Laboratory at Madison, Wis. and at the Bjorksten Laboratories."

1 1 1

LINK-BELT CATALOG HELPS SOLVE ENGINEERING PROBLEMS

Link-Belt Company has started distribution of its new 1,296-page catalog, said to offer some measure of relief from engineering manpower shortages. It contains 1,673 tables and charts of basic data that greatly simplify the problems of designing all kinds of conveyor systems, mechanical power transmission and many different types of processing machinery.

Copies of the eight-pound book, which has been three years in preparation, are being distributed as rapidly as possible to industrial and engineering firms, engineering schools, and libraries. All available copies are being used to cover purchasing executives, engineers, and estimators, in whose hands this information will contribute to the rapid solution of immediate problems.

A primary function of the book, which is identified as Link-Belt General Catalog 900, is service as a reference tool. It presents basic engineering data facilitating the selection of chains and wheels, drives, power transmission elements, conveyors and process machines in the combinations which will best satisfy a wide range of functional requirements and operating conditions.

1 1 1

O.T.S. OFFERS FULL STUDY ON ELECTRONIC EQUIPMENT

"Electronic Equipment Construction—new Objectives, New Techniques and New Components" is the title of a 300-page illustrated report available to the public from the Office of Technical Services of the U. S. Department of Commerce.

The report, prepared by Stanford Research Institute under contract to the Office of Naval Research, originally was intended simply as an investigation of the means for minimizing maintenance requirements of military electronic equipment. Interest in and demand for information progress in the entire electronics field was so great however that the study was expanded to its present scope. It consists of three parts: a description and evaluation of new components; a discussion of new construction techniques; and a survey of research at 62 of the nation's leading electronics development firms. Copies available at \$7.00 each from O.T.S., Dept. of Commerce, Washington 25, D. C.

(Please turn to page 304)



**FOR
SIMPLIFIED
PARTS DESIGN
...EASIER FABRICATION**

**B&W
Steel
TUBING**

TYPES

Seamless tubes—hot-finished, cold-drawn, or rockered
Welded tubes—from hot-rolled or cold-rolled strip

SHAPES

Round, square, rectangular, or special shapes

GRADES

Stainless steels—B&W Croloys 12 to 27
Intermediate chrome molybdenum alloys — B&W
Croloys 1/2 to 9
SAE—AISI alloys and nitralloy steels
Nickel steels—B&W Nicloys 3 1/2, 5, and 9
Carbon molybdenum steels—in various grades
Carbon steels—in various grades

SIZE RANGE

Up to 9 3/4 inches outside diameter in a wide range of
wall thicknesses

SURFACE FINISHES

As rolled, as drawn, as welded, flash removed, turned,
scale-free, and polished

SPECIFICATIONS

Made to any of the standard specifications such as
those of the ASTM and U. S. Government

QUALITY

Open-hearth and electric-furnace steels, including
aircraft and magnaflex qualities

CONDITION

Unannealed, annealed, tempered, normalized, or
otherwise heat-treated as required

FABRICATION

Upsetting, swaging, expanding, bending, safe-ending,
and machining

You can improve and simplify product design—make many forming, machining, and welding operations easier—with B&W Tubing, because it provides the properties you need in your finished product—but in the combination you need for easy fabrication.

B&W tubing is made in stainless, alloy, and carbon steels, seamless and welded, hot-finished, cold-drawn, or rockered, in a wide range of sizes, and in various surface finishes and heat-treated conditions, so that you can select the most economical tubing for your specific manufacturing procedure and end-use.

And you can be sure of getting the properties and characteristics you want in every foot of B&W Tubing, because manufacturing methods at B&W keep tubing quality consistently uniform.

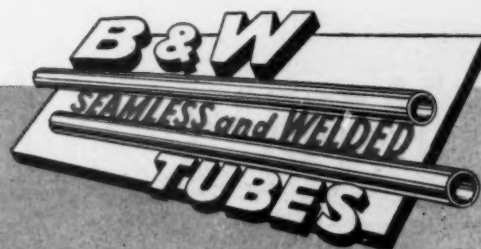
For help in finding the tubing best suited to your particular use, feel free to call on our technical staff. Their broad experience in tubing applications can be of value to you.

THE BABCOCK & WILCOX TUBE COMPANY

General Offices: Beaver Falls, Pa.

Plants: Alliance, Ohio, and Beaver Falls, Pa.

Sales Offices: Alliance, Ohio • Beaver Falls, Pa. • Boston 14, Mass. • Chicago 3, Ill. • Cleveland 14, Ohio • Denver, Colo.
Detroit 24, Mich. • Houston 2, Texas • Los Angeles 18, Calif. • New York 16, N. Y. • Philadelphia 7, Pa. • St. Louis 1, Mo.
San Francisco 3, Calif. • Springfield 2, N. Y. • Toronto, Ontario • Tulsa 3, Okla.



TA-1599-R

Take a tip from

JAMES T. DUFFY, JR.
PRESIDENT

THE RIVERSIDE METAL COMPANY

RIVERSIDE
NEW JERSEY



J. T. Duffy, Jr. (left), Pres., The Riverside Metal Company (and widely known Management, Production and Inventory Control authority) with Charles G. Sherwood, Director of Purchases (right), and Charles Messner, P.A., chg. of raw materials, Federal Telephone and Radio Corp.

Duffy looks to P.A. to help Riverside fill orders efficiently

"Without a purchasing unit in an organization, management would be handicapped, production sporadic, and inventory control out of balance", says James T. Duffy, Jr., President, The Riverside Metal Company. "The P.A. is the key liaison between the manufacturer and his sources of supply.

"Now, however, and for an indefinite future, the purchasing executive has inherited an even greater responsibility. He must know not only his Company's needs, specifications and policies, but the quality and prices of products in a given market.

"My sales staff at Riverside has always looked to the purchasing agent as a man who can help us fill his Company's orders efficiently and effectively. In

these chaotic times, we depend on him even more in his new, vital role in the American industrial way of life."

And the purchasing agent relies more than ever on *Purchasing* for the advance information and background knowledge he needs to meet the challenge of the times.

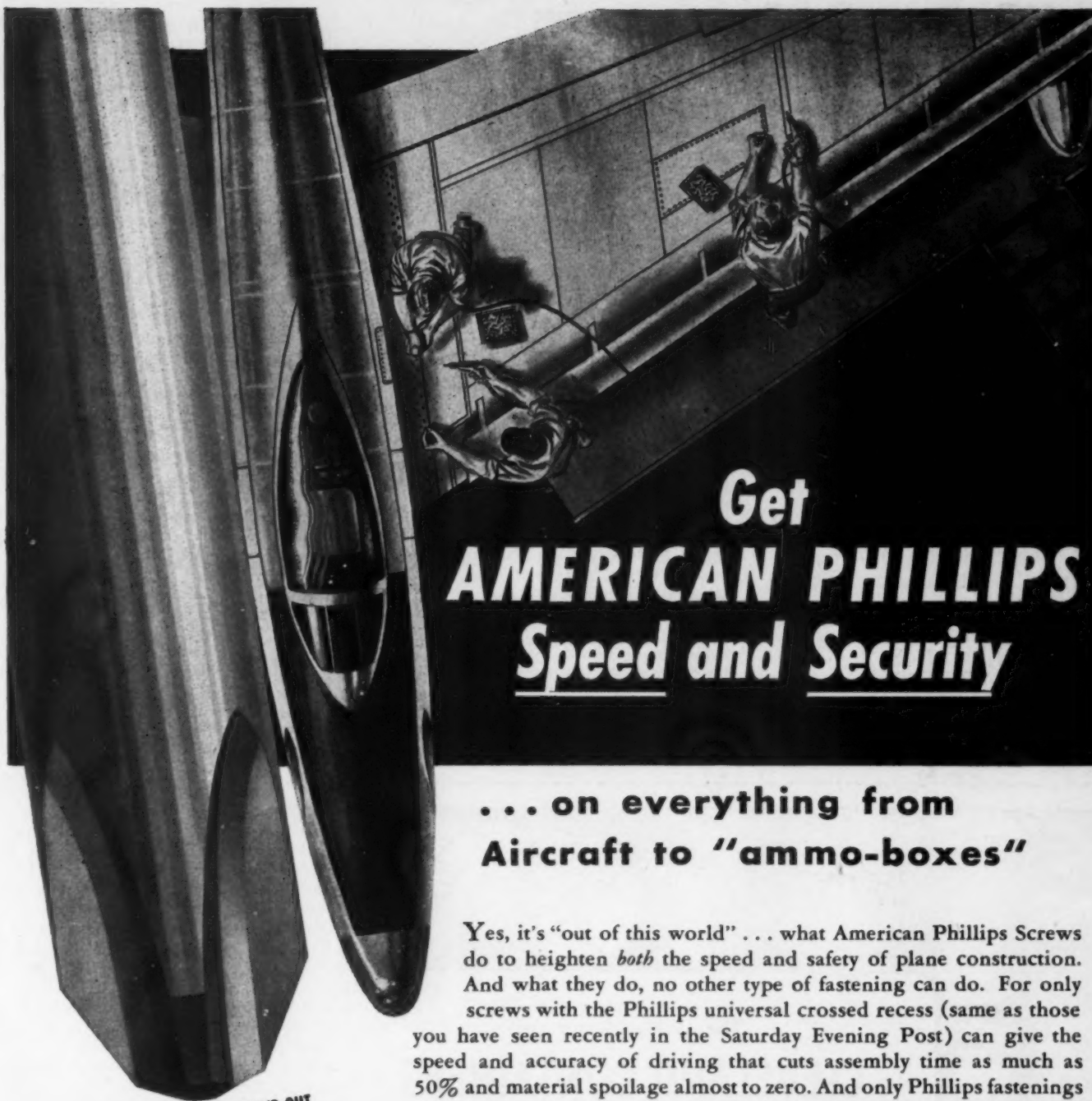
Read regularly by P.A.s controlling 85% of industry's purchases, *Purchasing* is the most efficient and effective way to tell your product story to this key man in industrial buying today — and tomorrow. For full details, write *Purchasing*, 205 East 42nd Street, New York 17, N. Y. Offices in Chicago, Cleveland, Dallas, Los Angeles.

PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING EXECUTIVES



A CONOVER-MAST
PUBLICATION



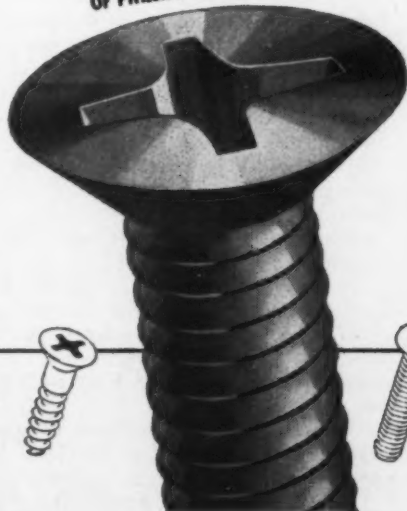
Get **AMERICAN PHILLIPS** Speed and Security

**... on everything from
Aircraft to "ammo-boxes"**

Yes, it's "out of this world" ... what American Phillips Screws do to heighten *both* the speed and safety of plane construction. And what they do, no other type of fastening can do. For only screws with the Phillips universal crossed recess (same as those you have seen recently in the Saturday Evening Post) can give the speed and accuracy of driving that cuts assembly time as much as 50% and material spoilage almost to zero. And only Phillips fastenings give the top torque values and amazing structural strength that stands up to the stress of service in plane wing-sections.

Yes, for top speed, strength and savings in all defense production ... from aircraft to ammunition boxes ... "fasten the American way" ... with American Phillips Screws.

4-WINGED DRIVER CAN'T SLIP OUT
OF PHILLIPS TAPERED RECESS



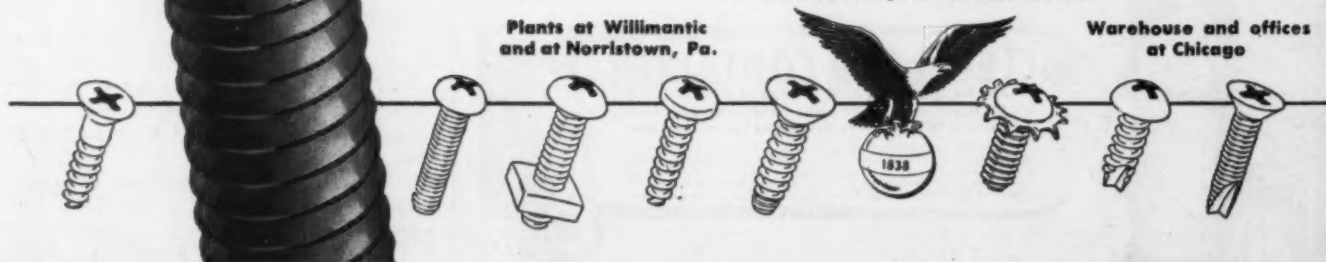
AMERICAN SCREW COMPANY

PHILLIPS HEADquarters

WILLIMANTIC, CONNECTICUT

Plants at Willimantic
and at Norristown, Pa.

Warehouse and offices
at Chicago



For Hinges, Stampings
and Deep Drawings by the
100 or 100,000
call on Stanley!



Complete Stanley facilities for stampings and special hinges are at your service whether you order in lots of a hundred—or a hundred thousand. Get the economy, efficiency, of turning all your requirements from first sketches to finished product over to one reliable source—Stanley! Write now to:

Pressed Metal Division,
The Stanley Works,
New Britain, Connecticut.

**6 Reasons Why Stanley Is Gearing
To Give You Better Service:—**

1. Comprehensive Engineering Service
2. Stanley-Owned Steel Mills
3. Testing and Research Laboratories
4. Complete Tool-Making Facilities
5. Quantity or Limited Production
6. Plating, Anti-Rust and Colored Finishes



New York • Detroit • Los Angeles
Chicago • San Francisco • Seattle

HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL

The Wide Range of
CLEVELAND CONTAINERS

includes many that are ideal for
Spare Parts Packaging
thus simplifying the problem of
protecting parts in handling and in transit.

Cleveland Plugs, Caps and Sleeves protect
threads and parts, in production, shipment
and while in storage.

STRENGTH • RIGIDITY • PROMPT DELIVERIES

The CLEVELAND CONTAINER Co.
6201 BARBERTON AVE. CLEVELAND 2, OHIO
• All-Fibre Cans • Combination Metal and Paper Cans
• Spirally Wound Tubes and Cans for all Purposes

PLANTS AND SALES OFFICES: Cleveland, Detroit, Chicago, Plymouth, Wis.,
Jamestown, N. Y., Ogdenburg, N. Y. • ABRASIVE DIVISION at Cleveland
SALES OFFICES: Grand Central Terminal Bldg., New York City; Washington
Gas Light Bldg., Washington, D. C.; West Hartford, Conn.; Rochester, N. Y.
Cleveland Container Canada, Ltd., Toronto, Ontario • Offices in Toronto and Montreal

**PLAN FOR RELIEVING
COPPER SHORTAGE**

The United States and Chile have a community of interest in expanded copper production which if made effective through the adoption of sound policies by both countries could end or materially reduce the copper shortage which is having a "blighting effect" on the American economy, according to C. Donald Dallas, chairman of the Board, Revere Copper and Brass Incorporated, on his return from a South American trip.

Mr. Dallas, who participated with heads of the Kennecott and Anaconda copper companies in meetings on the copper situation with President Gabriel Gonzales Videla of Chile, took issue with a statement by the president appearing in the press which was critical of World Bank and United States trade and finance policies. He said:

"Chile must consider that the way to wealth is through increased production and that increased production through foreign capital investment cannot be brought about in the face of discriminatory and destructive taxation and regulations. Capital naturally flows when the environment is favorable; it cannot be coerced."

Mr. Dallas found that South America is participating in the general rise of production and prices that followed the outbreak in Korea. He found that the United States has "many friends in South America, particularly because of the work of the Rockefeller Foundation and the able handling of affairs by Edward Miller, Jr., assistant secretary of state. But," he added "a rich relative is not always popular."

Pointing out that copper is vital to the welfare of Chile and essential to the economy of the United States, accounting for about 60 per cent of the exports of Chile and supplying for ten consecutive years of peace and war about one-third of United States copper requirements, Mr. Dallas offered a seven-point plan for relieving the shortage of copper and bringing real benefits to Chile:

"First. Increase production of Chilean copper. This increase is possible and is not only highly desirable but necessary, from both the Chilean and United States points of view. The Chilean government is asking for a 50 per cent increase. If the copper producing companies are guaranteed, as promised, satisfactory taxes and exchange rates the companies themselves may be able to finance the increase. Alternatively, as suggested by Chile, the financing could be done by the United States government, as is done in similar cases where increased output of a vital material is sought.

"Second. Abolish, not suspend, the United States import excise tax on copper. This is a very sore point politically with the Chileans. The tariff is an economic absurdity and has been such for ten years.

"Third. Arrange to maintain the purchasing power of dollars received for copper by Chile.

(Please turn to page 306)



"Whatever Your Conveyor Belting Problem . . . Thermoid Has The Answer"

Perhaps your problem is handling packages on an incline of 25—even 35—degrees. You'll find the solution in Thermoid "Ruff-Top" Conveyor Belting—with its thousands of small, rough, irregular-shaped points of soft rubber that take a firm grip on the lightest packages or cartons.

But whatever the job—whatever the nature of materials to be handled—heavy or light, soft or abrasive, hot or cold, wet or dry, uniform or non-uniform in size—consult your Thermoid distributor. He can recommend the right type of Thermoid Belt to do the job at the lowest cost per ton of material moved.

Thermoid's extra margin of endurance means fewer delays due to belt breakage or premature wear.

Here's The Book That Will Answer Many Of Your Questions



Drop us a line for your free copy of Book No. 3679. It is a handy reference guide, concise and complete. 16 pages of valuable charts, tables and graphs tell how to select the right conveyor or elevator belt for the materials to be handled . . . how to determine capacities, speeds, weights and number of plies.

Thermoid

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah

PERMACEL News Graphic

SPEEDING PRODUCTION WITH INDUSTRIAL TAPES



PHILCO FINDS NEW STAIN-RESISTANT TAPES speed production, protect white and near-white surfaces from stain or residue. PERMACEL-71 used above, holds metal letters in proper alignment until they are permanently affixed.



SPEEDIER, LESS EXPENSIVE "BUNDLING" PERMACEL Cloth Tape speeds assembling jobs for R. O. W. Distributors of Rocky Mount, Va. Tape is easily applied; sticks tightly, is easily removed.



® **Permacel**

**INDUSTRIAL
TAPES**

INDUSTRIAL TAPE CORPORATION
NEW BRUNSWICK, NEW JERSEY

Makers of TEXCEL Cellophane Tape and a complete line of pressure-sensitive tapes for industry.

FREE! Send for helpful new booklet—"A New Tool for Industry"—12 fact-filled pages showing how tape can help your business. Write Dept. 4A.



SEALING ROOF JOINTS —is typical of the time-and-cost-saving uses of PERMACEL Tapes. The Redi-Built Company of Corvallis, Oregon, used PERMACEL Tapes for this purpose in building the above storage bins.

(Continued from page 304)

"Fourth. Arrange any priorities needed for Chilean imports of machinery needed for copper production.

"Fifth. If it is necessary in the current emergency to pay Chile more than the present price of copper — say 28 cents a pound — then the United States government, as was done in the last war, should purchase in this emergency all Chilean copper from the three large American-owned mines, absorb the difference in price, and arrange for the distribution of the copper. We would obtain in this way all the copper not needed for actual consumption in Chile, and for the normal internal requirements of the other South American countries which are dependent on Chile.

"Sixth. Wipe out the black market in scrap copper, which has a demoralizing effect both at home and abroad. Ceiling prices should be put on scrap immediately.

"Seventh. Charles E. Wilson has acted wisely in curtailing the recent rate of stockpiling of copper. In my judgment, it should be suspended entirely, as soon as present commitments of the copper producers have been met. Stockpiling has aggravated the world shortage of copper and is one of the principal causes of the shortage. It has forced up the price for ourselves and our allies and it has thrown tens of thousands of men out of work in the United States.

"In the event of actual war all stocks of copper in Western Hemisphere possession become our stockpile for military purposes and all the production of the hemisphere is available to us. This production has exceeded 2,000,000 tons in several war years — 25 per cent more than we used in our heaviest war years. The result was an accumulation by the R. F. C. of about 600,000 tons beyond requirements."

Measures such as these, Mr. Dallas said, would correct conditions which have caused widespread curtailment in the copper fabricating industry.

DEVELOP PROGRAM FOR CONSERVING SPOT WELDING ELECTRODES

A program for the conservation of spot welding electrodes has been developed by P. H. Mallory & Co., Inc., Indianapolis, Ind., as a means of conserving copper while still providing dependable spot welding electrodes. Mallory engineers have developed a unique process for brazing onto a used electrode shank a new nose of the same class of material. The process, known as "Nu-Tip" employs a special Mallory silver solder which is said to provide a bond of high melting point, high strength and low electrical resistance. Loss of electrode hardness due to brazing is held within a very low limit. It is reported that in comprehensive offset welding tests "Nu-Tip" electrodes have run 30,000 welds and have withstood repeated applications of 2,000 pounds of force at an angle of 30 deg. "Nu-Tip" electrode literature describes the method in detail.

No WORRY Over Alloy Shortages Here!



Courtesy—Errington Mechanical Laboratory, Inc.

Restrictions in the use of nickel alloys almost brought production of these gears to a halt. Instead, an increasing number of gears are being produced to meet defense requirements—and vital nickel is being conserved. The story contains an idea you, too, may find useful.

The gears, machined from alloy bar stock, form the gear train in a multiple drill head—a versatile, high speed production tool. Precision made to individual specifications, this drill head can drive a number of drills or taps simultaneously, each at its own spindle speed, with only a single work set-up.

The builder—unable to obtain enough nickel moly steel to meet production goals—posed his problem to Frasse Technical Service. Frasse engineers, through wide experience in

solving similar problems during World War II, recommended the use of a lean nickel-chrome-moly type, and a heat treatment to suit. The substitute not only met requirements, but was available from Frasse warehouse stock.

Substituting is not a new idea—but are you using it to full advantage? If steel supply is causing you anxiety, why not let a Frasse engineer check “specs” with you? Perhaps he can find you a suitable substitute that’s a bit easier to get. There’s no obligation. Just write or call your nearest Frasse office today. *Peter A. FRASSE and Co., Inc.*, 17 Grand St., New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Ave., Philadelphia 29, Pa. (Baldwin 9-9900) • 50 Exchange St., Buffalo 3, N. Y. (Washington 2000) • 157 Richmond Ave., Syracuse 4, N. Y. (Syracuse 3-4123) • Jersey City • Hartford • Rochester • Baltimore.

Peter A. FRASSE and Co., Inc.

Call
FRASSE 1st

for Alloy, Stainless and Cold Finished
Carbon Steels — Bars • Sheets • Strip •
Plate • Pipe • Tube • Valves • Fittings

Heat Treating Alloy Steels?

This new book contains all salient data for normalizing, annealing, carburizing and other heat treating methods. Includes data and charts on critical points, nitriding depths, mechanical properties, and similar essential information. Send the coupon for your free copy today.



Peter A. FRASSE and Co., Inc.
17 Grand Street
New York 13, N. Y.

Please send me a complimentary copy of your new book on heat treating alloy steels.

Name.....Title.....

Firm.....

Address.....

12-A

THE TOUGHER THE CUTTING JOB...



...THE BETTER THE OPPORTUNITY FOR

abrasive cutting

Some people do it the hard way, but a smart operator finds a better way . . . Abrasive Cutting, for instance.

Whether it's steel, glass, non-ferrous metals, ceramics . . . tubing, shapes, or bar stock . . . Allison Wheels slice thru the material at high speeds, cleanly to a few thousandths . . . and with little or no after-finishing. An Allison A.C.E. (Abrasive Cutting Expert) can recommend the wheels and the equipment best suited to your needs.

We like tough jobs

... consult us about yours!

THE ALLISON COMPANY

257 Island Brook Ave.
Bridgeport 8, Conn.



May WE do these things for YOU?

Perhaps our modern facilities and capable personnel can deliver values you are seeking, such as:

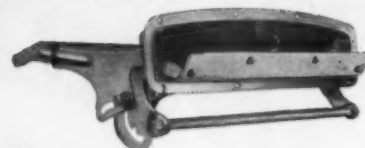
- WHEELS, HUBS, SPINDLES & AXLES
- COMPLETE & SUB-ASSEMBLIES
- STAMPINGS
- MACHINING
- GREY-IRON CASTINGS
- SPECIAL ROLLED SECTIONS

also

WHEELS for
AGRICULTURE & INDUSTRY

for
Example

LIGHT GAGE MANUFACTURE



Here is
a FRAME ASSEMBLY
for TRUCK COWL VEN-
TILATOR

We Invite
Your Inquiries



GOT A PROBLEM?

You should use Chicago "Safety Plus" Screws

- SOCKET SCREW PRODUCTS
- CAP and SET SCREWS
- NUTS • TAPER PINS • STUDS

Service-conscious Industrial Supply Distributors EVERYWHERE carry complete stocks of Chicago "Safety Plus" products designed to give you a tighter, lower cost fastening for any heavy duty purpose. To speed delivery time, call the distributor nearest you today.

THE CHICAGO SCREW COMPANY

2503 WASHINGTON BOULEVARD
BELLWOOD, ILLINOIS

IF YOU HAVE TOWEL SUPPLY HEADACHES



You can take
an aspirin

OR

You can consult
a phrenologist



BUT, IT'S BETTER TO INVESTIGATE NIBROC® TOWELS!

• DEPENDABLE SOURCE OF SUPPLY

Nibroc towels are made by one company from timber-cutting to finishing. One Brown Company machine alone can produce nearly 30,000,000 towels a day.

• NATION-WIDE DISTRIBUTION

No matter where you're located, a network of distributors and dealers, plus high mill production, insures prompt delivery of Nibroc towels.

• OUTSTANDING QUALITY

Nibroc towels are soft, super-absorbent, lint-free, economical.

• LARGEST SELLING

Nibroc is the world's largest selling paper towel for industrial and institutional use.

• 4 NIBROC ACES

NO. 2220—white multifold towel of superior absorbency, strength and softness. Size, 9 $\frac{1}{8}$ " x 9 $\frac{1}{2}$ ".

NO. 5010—brown multifold towel—an economy towel, tough, yet highly absorbent and soft. Size, 9 $\frac{7}{8}$ " x 12".

NO. 5020—brown multifold towel for schools, and industrial use where quick wipes are frequent. Size, 9 $\frac{7}{8}$ " x 9 $\frac{1}{2}$ ".

NO. 5021—brown singlefold towel offering high quality performance at low cost. Size, 9 $\frac{7}{8}$ " x 10 $\frac{3}{4}$ ".

• NIBROC CABINETS

Modern, streamlined, sanitary, hold up to 50% more towels than ordinary cabinets.

MAIL THIS COUPON TODAY FOR NIBROC TOWEL SAMPLES

NIBROC TOWELS

A PRODUCT OF  **BROWN** *Company*

Berlin, NEW HAMPSHIRE

GENERAL SALES OFFICES: 150 CAUSEWAY STREET, BOSTON 14, MASS.

Branch Sales Offices: Portland, Me., New York, Chicago, St. Louis, San Francisco, Montreal

SOLKA & CELLATE PULPS • SOLKA-FLOC • NIBROC PAPERS • NIBROC TOWELS • NIBROC KOWTOWLS • BERMICO SEWER PIPE, CONDUIT & CORES • ONCO INSOLES • CHEMICALS

NIBROC TOWELS
GET YOU BONE DRY



BROWN COMPANY, Dept. P4
150 Causeway Street, Boston 14, Mass.
Please send me samples of Nibroc towels
and name of nearest supplier.

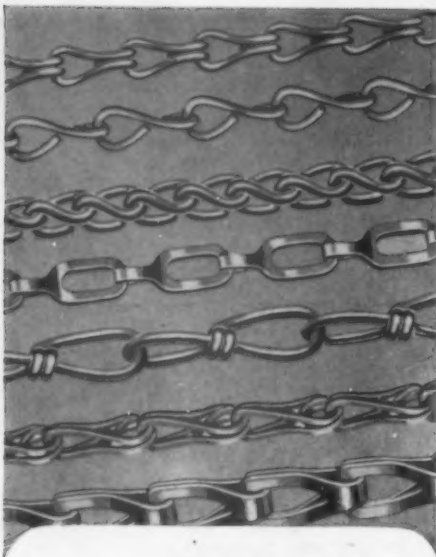
Name _____

Title _____

Company _____

Address _____

City _____ Zone _____ State _____



HODELL CHAIN

Serves the Best

Top-quality chains made by Hodell meet any industrial need, and conform to Government specifications. Types available include: *Jack, Sash, Safety, Ladder, Sprocket, Pump, Liberty Machine, Proof Coil, Liberty Coil, Passing Link, Samson, Flat Link, Register*. Hodell can also make your special chain assemblies. Send us your specifications, or write for a copy of the Hodell Industrial Chain Catalog, giving full information on the complete Hodell line.

HODELL CHAIN COMPANY

Cleveland 3, Ohio

Div. of The National Screw & Mfg. Co.



50-PAGE BOOK ON DUST CONTROL TECHNOLOGY

Detailed selection, operation and maintenance data on dust control is contained in a 50-page, 5" x 7½" book entitled "Industrial Dust Control Through Exhaust Systems", available from the Pangborn Corporation, Hagerstown, Md. Liberally illustrated with 15 photographs and 10 line drawings, the book treats, in three major sections, (1) Exhaust Hoods and Piping Systems, (2) Dust Collecting Equipment, and (3) Exhausters and Drives.

"This booklet is not intended as an engineering text book on the subject of Industrial Dust Control", states the foreword, "but rather as a general descriptive outline prepared for the purpose of acquainting plant executives with the means of controlling industrial dusts as the source of production through the medium of exhaust systems."

1 1 1

NEW CHEMICAL ADDS ANTI-CORROSIVE VALUE TO COATINGS

The increasing shortages of tin and alloy metals resulting from America's preparedness program will be alleviated to a considerable degree by the chemical developments that have been made in coating materials, it was forecast today by J. L. McMurphy, manager of the Chemicals Division of General Electric's Chemical Department, Pittsfield, Mass.

With losses from corrosion estimated at several billions of dollars a year, chemical manufacturers have spent large sums for research in the development of improved coatings for metal products. The General Electric Company has played an active part in search for better protective finishes, said Mr. McMurphy. Immediately after the last war, G. E. started work on what was described as an altogether new concept in coating materials. The product, which was made semi-commercially available a few months ago, is called R-108.

R-108 is an excellent example of the improved chemicals now being used in coatings that have come out of industrial laboratories as the result of post World War II research. G. E.'s new material, technically referred to as an intermediate, is used as an ingredient in coating formulations to impart outstanding alkali and acid resistance.

Ordinary steel chemical processing equipment coated with a finish containing R-108 can be substituted in many applications for expensive and hard-to-get alloys. Finishes for the interiors of metal drums can be made that are highly flexible and because of their chemical resistance, give steel drums longer life.

R-108 has shown a great deal of promise in a coating to replace tin used in food containers, Mr. McMurphy added. The success of such a development would mean that food processors would not be entirely dependent on tin imports to serve consumer and defense requirements.

(Please turn to page 312)



with Mione HAND CLEANERS

Skilled hands are a valuable asset to management, as well as an important responsibility of it. Mione Hand Cleaners can insure that asset by helping to share the responsibility for keeping skilled hands in prime working condition.

WORKERS like the quick-lathering, gentle-scrubbing, easy-rinsing action of Mione. And its very definite skin conditioning value.

MANAGEMENT likes the safe, sanitary, efficient, trouble-free Mione features, plus its economy per pound, low cost per scrub-up, and the basic economy of skilled hands always at top productivity.

YOUR SUPPLIER of washroom needs can give you full particulars about Mione so that you, too, can benefit from the know-how gained from 40 years of making nothing but better and better soap for the hands.

WRITE US FOR THE NAME OF THE
MIONE SUPPLIER IN YOUR AREA

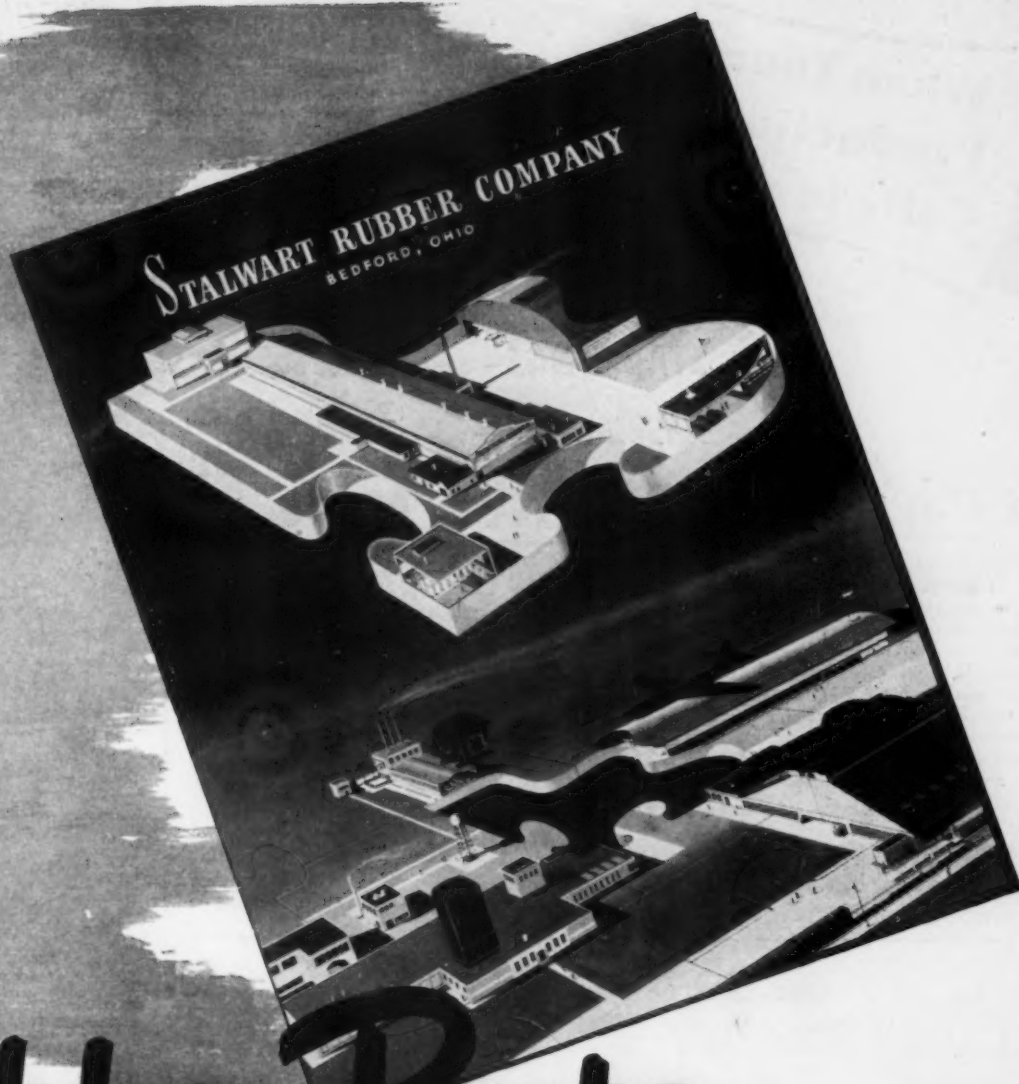
Mione

MANUFACTURING COMPANY

Makers of famous hand soaps
for 40 years

COLLINGDALE

PENNSYLVANIA



Rubber Parts...

NEW CATALOG CONTAINS DATA ON COMPOUNDS, APPLICATIONS AND FABRICATION METHODS

This 16-page, illustrated, multi-colored catalog now is available to design, production, purchasing and management personnel. This publication has been compiled to familiarize readers with Stalwart-developed rubber compounds which feature resistance to (1) abrasion, (2) chemicals, (3) high and low temperatures, (4) petroleum products and derivatives, and (5) weathering. Sections of the catalog are devoted to the new and outstanding Silicone Rubber compounds, the major methods of fabrication, and Stalwart production facilities.

More than 60 Stalwart-developed compounds are listed by code number. Charted individually

in conjunction with these compounds are their physical properties and general characteristics, as well as suggested applications.

Catalog 51SR-1 will be sent upon receipt of coupon or on letterhead request.

STALWART RUBBER COMPANY

4162 NORTHFIELD ROAD • BEDFORD, OHIO

THE STALWART RUBBER COMPANY

Please send (without obligation) your new 16-page, illustrated, multi-colored Catalog 51SR-1.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

**When Your
Production
Calls for**

- ✓ Better Design
- ✓ Better Quality
- ✓ Reliable Service

of SCREW MACHINE PRODUCTS

STAMPINGS—any metal or plastics

ASSEMBLIES—sub or complete

It Pays to Let STEINEN Make It

Let Steinen "know-how" and cooperation—extensive machine facilities—precision workmanship—close inspection controls—and over 40 years of experience in serving many outstanding American concerns help you meet your urgent contracts. Whether it's a hundred, a thousand or a million units, large or small—Steinen engineering and modern high speed production methods assure you of a dependable source of quality products.

We invite your inquiries.

Write—or phone Market 2-5747

WM. STEINEN MANUFACTURING CO.

49 Bruen Street

Newark 5, N. J.



TOPS in Both
Eye and Price Appeal
—KALAMAZOO LABELS

SPECIALISTS in paper labels of all kinds for over 45 years . . . that's the type of experience we offer you.

Yes, whatever your requirements, it will pay you to consult with us . . . pay you to discover the **EYE** appeal and **PRICE** appeal of Kalamazoo air conditioned labels!

Quotations, samples, design suggestions—all without any obligation on your part. Your inquiry is invited.

• AUTOMATIC CONTROL SAVES!

We operate a completely air conditioned plant. This means high speed, high quality production without the extravagance of spoilage. Our quotations always reflect this manufacturing economy.

• SOURCE-BUYING SAVES!

Located, as we are, in the heart of the paper industry is one of the many other reasons why a proposition from Kalamazoo Label is invariably attractive.

Write for FREE Booklet

Informative, illustrated booklet describes label production in a modern, fully air conditioned plant. Send for your free copy today!



KALAMAZOO LABEL COMPANY, Kalamazoo, Michigan

Exclusive Label Manufacturers Since 1906

**SNAP-ON SHELF SUPPORT FOR
USE WITH UNISTRUT CHANNEL**

Uni-Clip, a new spring-steel shelf support designed for use with standard Unistrut channel, is announced by the Unistrut Products Co., 1013 W. Washington St., Chicago, Ill. The clip is claimed to make for marked economy not only by reducing labor costs, but also by reducing the number of horizontal framing



members and fittings required. The device snaps in or out of the vertical channel member easily, and permits adjustments to be accurately made to a fraction of an inch. By its use, wood or plywood shelves can be supported without the use of customary cross bars. The clip permits continuous decking and quick removal or adjustment of shelves to meet storage needs. Once firmly snapped in place, the grip of the Uni-clip becomes greater as the weight it supports is increased.

**REYNOLDS METALS ISSUES
NEW ALUMINUM DATA BOOK**

A new 194-page publication, "The Aluminum Data Book", has just been issued by the Reynolds Metals Co., Louisville, Ky. Vital facts on aluminum alloys and mill products have been condensed into a handy pocket-size manual which contains 117 tables of data on physical, chemical, and mechanical properties, standard tolerances, weights standard sizes and production limits, as well as much fabricating data.

There are 33 pages of explanatory text covering a wide range of related subjects such as the alloy designation system, the temper designation system, heat treatable and non-heat treatable alloys, casting alloys, and foundry practice. Wrought aluminum mill products are detailed.

The text also includes a discussion of aluminum casting alloys; another section covers pig and ingot products, while separate sections on physical properties, chemical properties, and mechanical properties define terms and special characteristics of aluminum.

This book is a revision and enlargement of a similar book issued by Reynolds in 1948. Copy will be sent without charge to executives who request it on company letterhead. Address Reynolds Metals Co., 2500 So. Third St., Louisville, Ky.

(Please turn to page 314)

MicroRold[®] 430

polished sheets now available



During the current critical nickel shortage, the same close tolerance and uniformity of gauge that have made MicroRold 18-8 so outstanding are now being incorporated in MicroRold 430.

It is important that the individual end use be discussed with your distributor or with our metallurgical department.

MicroRold 430 has moderate ductility, good forming and bending characteristics, and can be drawn to a *moderate* degree. It can be brazed and

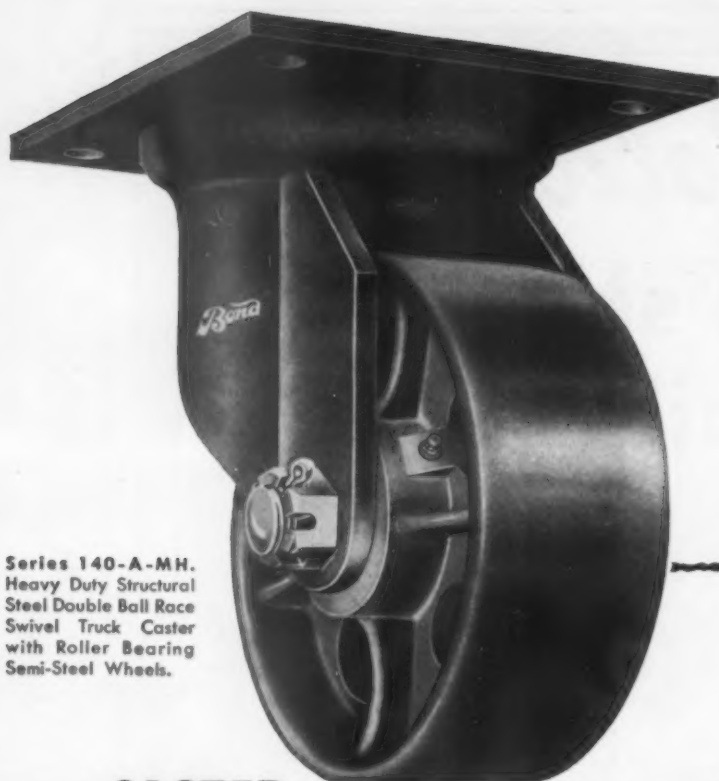
soldered with the same facility as chrome-nickel grades and except where resistance to high stresses is a major factor, it welds satisfactorily by the usual methods.

MicroRold 430 is used extensively for interior architectural trim, bar, restaurant and soda fountain components, table tops, etc. Washington Steel Corp. is currently producing polished sheets in standard sizes, 20 gauge and lighter, to replace chrome-nickel material vitally needed for the national defense program.

WASHINGTON STEEL CORPORATION

Washington, Pennsylvania





Series 140-A-MH. Heavy Duty Structural Steel Double Ball Race Swivel Truck Caster with Roller Bearing Semi-Steel Wheels.

new **CASTER
SERIES**
new **STRENGTH**
new **USES**

Bond 40-A-MH Series Swivel Casters and their companion Rigid Casters (41-A-MH) bring important advantages to users of industrial casters. These heavy duty casters are available in a greater range of wheel diameters—5", 6", 8" and 10". Both series are made of even thicknesses of heavy steel, uniformly shaped for extra strength and rigidity. Swivel casters have hardened ball races to absorb shock and eliminate strain on king bolt. Wheels of both types have roller bearings revolving on hardened and ground steel sleeves to assure freedom of motion. All are pressure lubricated for trouble-free operation.

Bond 40-A-MH and 41-A-MH Series are available with roller bearing Semi-Steel, Vulcanized-on Soft or Hard Rubber Tread and Celoron Wheels.

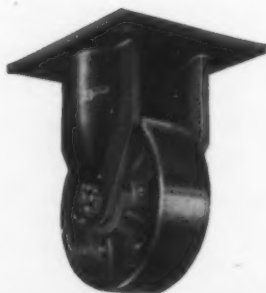
Write today for full information on the Bond 40-A-MH and 41-A-MH Heavy Duty Casters. Ask, too, for your copy of the Bond Catalog K-38.

BOND FOUNDRY & MACHINE CO.
MANHEIM, PENNA.

Bond®

built-for-the-job

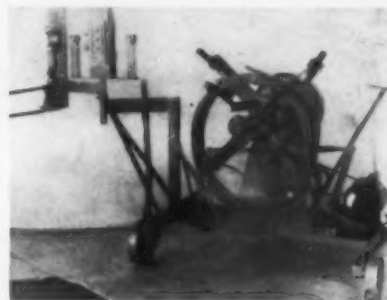
**40-A-MH and
41-A-MH Series
Heavy Duty
STRUCTURAL
STEEL CASTERS**



Series 141-A-MH. Heavy Duty Structural Steel Rigid Caster with Roller Bearing Semi-Steel Wheels. Companion caster to the 140-A-MH Swivel Caster.

**TIME SAVING CABLE
HANDLING EQUIPMENT**

A solution of many cable, rope and wire handling problems is found in a new line of reels and reeling devices developed by Kimball Brothers Company, Council Bluffs, Iowa.



Collapsible reel simplifies handling specific lengths ready for shipping

One of the units is a coiling reel which is available with or without cutting attachments. Its collapsible reel makes it possible to reel cable, rope or wire into specific lengths, wrap and tie the coil, and collapse the arms of the reel, thus completing all necessary handling for shipping. The cutting device is a hydraulically operated cutter which will sever the heaviest cable with a few strokes.

The coiling device has an over-all size of 3' 2" x 5' 3". It is mounted on ball bearing casters, and is easily moved about. Powered by a small single or multi-phase motor or gas engine, coupled to a variable speed drive, the machine gives a wide range of coiling speeds.

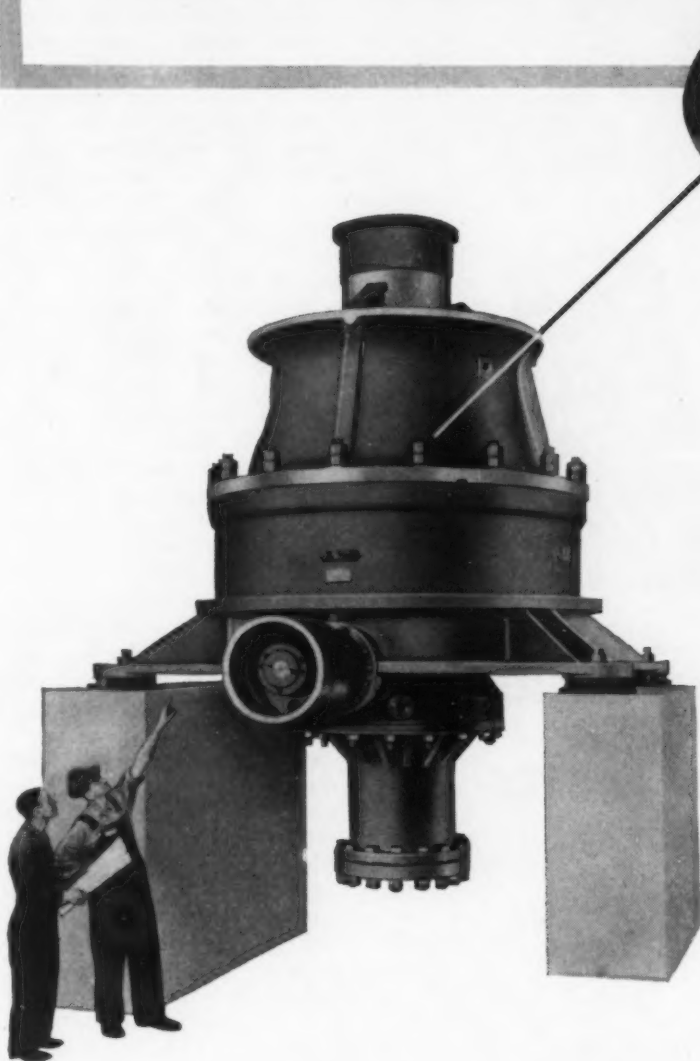


The reel lifter and truck is equipped with rollers under the reel

Another unit is a rewinding or transfer reel, with power driven reeling device. It is equipped with a measuring and cutting device which enables accurate inventorying of partially used reels of material. This reel can also be equipped with a gasoline engine for outside use. Also, it can be mounted on railroad handcars or on trucks for use in salvage work.

For solving the problem of handling loaded reels, the company developed a reel lifter and truck. Equipped with a hydraulic lift and roller bearing casters, the lifter can be used for placement of reels in the warehouse. Being equipped with rollers under the reel, reels may be unwound while on the lifter. This feature has been found valuable when transferring and measuring cable for inventory especially when used in conjunction with the transfer reeling device.

Even this jarring giant can't shake **LOK-THRED** loose!



This Allis-Chalmers "Hydrocone" Rock Crusher is one of the largest of its kind ever produced. You can readily imagine the severe strains and vibrations to which such a machine is subjected.

For positive locking and extra strength in joining the heavy sections, large LOK-THRED studs are used. Under the severe jarring and vibration, these 3" x 16½" studs actually become tighter in service.

This positive locking action is one of LOK-THRED's key advantages. Others are: high fatigue limits, extra strength in both tension and torsion, sealing action against pressure, and the fact that selective fits are not required. LOK-THRED is available in any size stud, bolt or screw. Have you fully investigated its possibilities for your product?

Get the Facts about Lok-Thred. Write for new Lok-Thred booklet giving complete engineering and application data.



National Products Include: **HODELL CHAINS • CHESTER HOISTS**



THE NATIONAL SCREW & MFG. COMPANY

Cleveland 4, Ohio

Pacific Coast: National Screw & Mfg. Co. of Cal.
3423 South Garfield Ave., Los Angeles 22, Cal.

...make gloves last
3 to 5 times LONGER!

BEFORE



LEATHER

RUBBER OR COTTON

How
Much Will
This Reduce
Your Yearly
GLOVE
Cost?



AFTER

THIS IS WHAT "WASH-RITE" DOES...

Throw all your dirty, worn leather, rubber or cotton gloves in our steel drum. Ship to us. We correctly clean, sterilize, COMPLETELY REPAIR, sort, reshape, pair and ship them back to you as serviceable as new. Depending upon the gloves and their usage, gloves are being re-claimed by us 3 to 5 times. We specialize only in laboratory controlled re-claiming of rubber, leather and cotton gloves, aprons and clothing. Write for literature.

10 Years of Proven Service

YOUR GOODS FULLY INSURED...WORK GUARANTEED

... it costs
you nothing
to find out.
SEND US A
FREE TRIAL
ORDER

Wash-Rite Company, Inc.

1412-26 CORNELL AVENUE · INDIANAPOLIS 2, INDIANA

FLEXCO

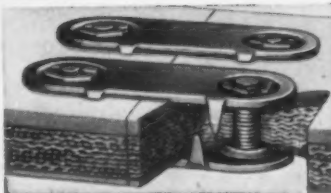
®



**BELT
FASTENERS
and
RIP PLATES**

**FOR HEAVY
CONVEYOR
AND
ELEVATOR
BELTS OF
ANY WIDTH**

- ★ FLEXCO Fasteners make tight butt joints of great strength and durability.
- ★ Trough naturally, operate smoothly through take-up pulleys.
- ★ Distribute pull or tension uniformly.
- ★ Made of Steel, "Monel," "Everdur." Also "Promal" top plates.
- ★ FLEXCO Rip Plates are for bridging soft spots and FLEXCO Fasteners for patching or joining clean straight rips.



Compression Grip distributes strain over whole plate area

Order From Your Supply House. Ask for Bulletin F-100

FLEXIBLE STEEL LACING CO., 4697 Lexington St., Chicago 44, Ill.

Purchasing Agents at the Crossroads

(Continued from page 72)

All of this policy planning requires analytical ability and breadth of vision. These characteristics are not frequently found together with sales ability. The competent purchasing agent must be an able organizer and administrator except in the very smallest of organizations. Purchasing characteristically involves many items, many suppliers, and a wide diversity of problems. Even in the smallest department, this requires discrimination between the important and the unimportant, the significant and the routine. In larger units, the purchasing agent is mostly an administrator and only incidentally a buyer. Good administration requires leadership ability, ability to plan, ability to delegate, and ability to coordinate. So, in addition to being a good salesman and being proficient in policy thinking, our latter-day purchasing agent must be a good administrator. The combination of these skills and abilities is difficult to find.

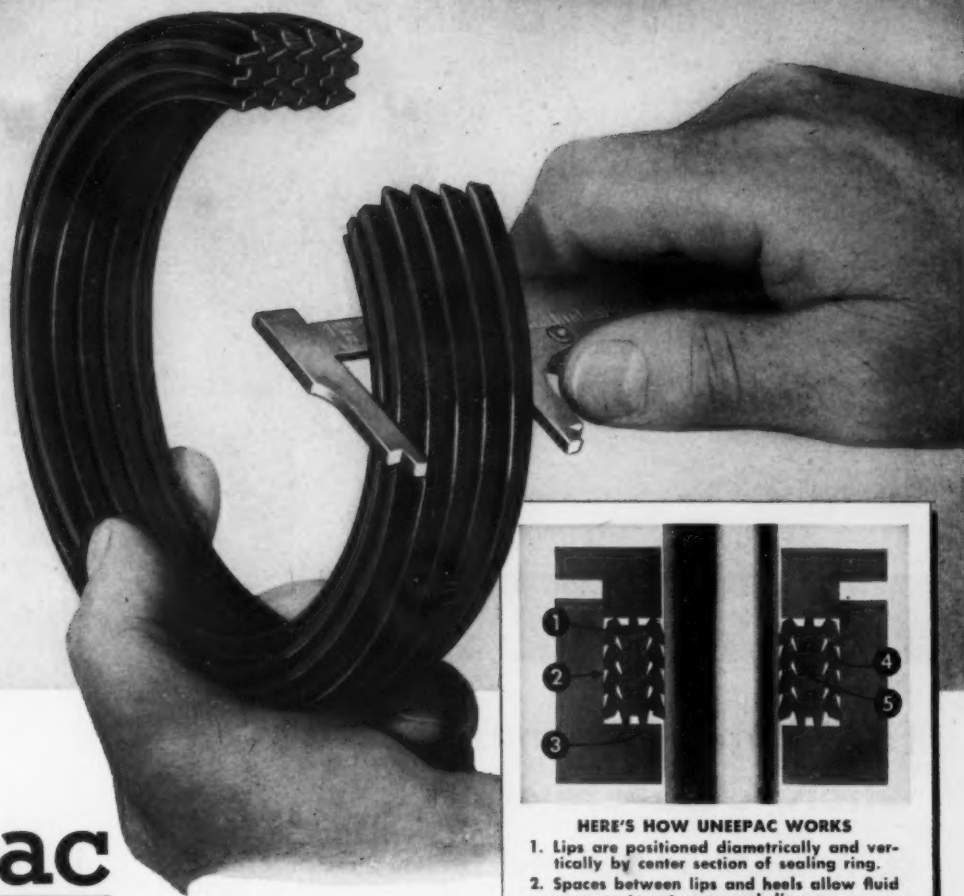
Finally, of course, the competent purchasing agent is a technician in a commercial field. He deals with technical materials, made by a technical process, and used in technical applications. Yet the materials are articles of commerce which move through channels of distribution for commercial reasons. Just as the workman must be skilled in the tools of his trade, so must the purchasing agent be technically and commercially informed in the area in which he works. What manner of man is this who must be salesman, policy-maker, administrator, and technician? Clearly, he is the kind of man who is top management material. For purchasing is a top management function. If and where it is not now, then it must become so, soon. Not only the profit, but the very existence of many a company will hinge upon successful procurement in the days ahead.

The challenge we face is a game for high stakes. The rewards are great, but the test of battle will unseat many, even while it carries others to the heights. The years ahead are years of decision. The day of opportunity and the day of challenge have both arrived.

There is a tide in the affairs of men which if taken at its flood, sweeps on to fame and fortune, but those left behind will remain in the shallows of its ebb.

Fellow Purchasing Agents, the stage is yours and the spotlight is upon you. Rise and shine.

Seals in a MINIMUM of space...



Uneepac

...the new Johns-Manville
automatic ring packing

EQUIPMENT DESIGNERS are finding that this newest Johns-Manville packing development enables them to hold stuffing-box sizes to a minimum . . . thereby save both space and machining.

This ability of Uneepac to provide high sealing efficiency in minimum packing depth results from the fact that each ring is a complete self-contained packing unit. Uneepac is designed so that the center section of each ring positions the lips and protects them from excessive gland pressure. Header and follower rings are therefore seldom required.

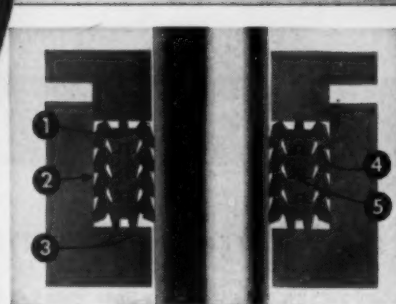
In addition, Uneepac offers other advantages that are important both to the designer and the user:

SIMPLIFIED INSTALLATION—Each Uneepac ring centers itself on the preceding ring so that the entire set is aligned vertically and nested perfectly. This feature practically insures trouble-free installation.

MORE EFFICIENT SEALING—Because it is designed so that each lip is always exposed to fluid pressure, Uneepac has excellent pressure sensitivity . . . is instantly responsive to fluid pressure changes.

REDUCED FRICTION AND WEAR—The operation of this new automatic packing is completely independent of gland pressure. This reduces friction to a minimum—saves wear on both rod and packing—and contributes to longer life with corresponding reductions in down time for replacements.

Uneepac is available in sizes from $\frac{3}{8}$ " inside diameter to 63" outside diameter. For complete information, write Johns-Manville, Box 290, N. Y. 16, N. Y.



HERE'S HOW UNEEPAC WORKS

1. Lips are positioned diametrically and vertically by center section of sealing ring.
2. Spaces between lips and heels allow fluid pressure to act upon each lip.
3. Lips are protected by the projecting portion of center section against damage by excessive gland pressure.
4. Lips are supported to prevent collapse or distortion by excessive fluid pressure.
5. Each ring correctly centers itself on the preceding ring so that they align vertically and nest perfectly.



Johns-Manville PACKINGS & GASKETS

KENNEDY

Fig. 544P



JOB-FITTED

**for longer disc and seat life...
where accurate control is a must**

Like all valves in the complete KENNEDY line these bronze globe valves are JOB-FITTED . . . specially designed and engineered for the job they have to do!

UNION BONNET RING, heavy bronze section with extra thread engagement to assure a tight joint. Union bonnet makes a valve easy to dismantle and reassemble.

STEM, Naval Brass Rod, Acme threads, large diameter with extra thread contact . . . extremely resistant to wear.

PACKING, molded rings of graphited, wire-inserted asbestos designed for high pressure service.

PLUG TYPE DISC, nickel copper alloy, has extra wide seating surfaces for precise throttling control . . . is exceptionally resistant to scouring or wire drawing.

RENEWABLE SEAT RING, nickel copper alloy, ground to match disc in each valve to assure full bearing surfaces over entire contact area of each.

KENNEDY Fig. 544P, plug type disc, and Fig. 544, full-way disc, are designed for 300 lbs. steam, 600 lbs. WOG. Fig. 138P, plug type, and Fig. 138, full-way disc, for 200 lbs. steam, 400 lbs. WOG.

WRITE FOR BULLETIN 108



THE

KENNEDY

VALVE MFG. CO. • ELMIRA, N.Y.

VALVES • PIPE FITTINGS • FIRE HYDRANTS

British Socialism Is on the Decline

(Continued from page 96)

the labor leaders have been patriotic enough to avoid that contingency in steel, so far as possible.

The socialists in the British Empire attained their first victory in New Zealand, their second in Australia, and their third in England itself. Curiously enough, New Zealand was the first to turn back to the right. Australia followed. It is fairly safe to predict that socialism in England has about run its course. While England suffered severely in two great World Wars, there is little doubt that the Fabians, working from the inside, were the most potent factor in dragging England from her high position.

The English are endowed with hard common sense, and it is quite likely that they will recognize the source of their misfortunes and will yet reverse the trend which seems to have reached its peak. If the results of socialism in England are recognized in this country, and if our people will benefit by her sad experiences, we shall be amply rewarded for all our financial contributions to the people of Great Britain.

✓ ✓ ✓

Steel Industry Raises Its Sights

(Continued from page 100)

left will be distributed to civilian requirements. This allocation is going to be hard on many small companies. They can work their way into subcontracts on essential work.

We are back where we were shortly after Pearl Harbor. We will cut down on autos, television, radios, appliances, etc., and in so doing can create a backlog of demand to be satisfied after the challenge of defense against aggression has been met. Do not underestimate the potential of this reservoir of accumulated, deferred demand.

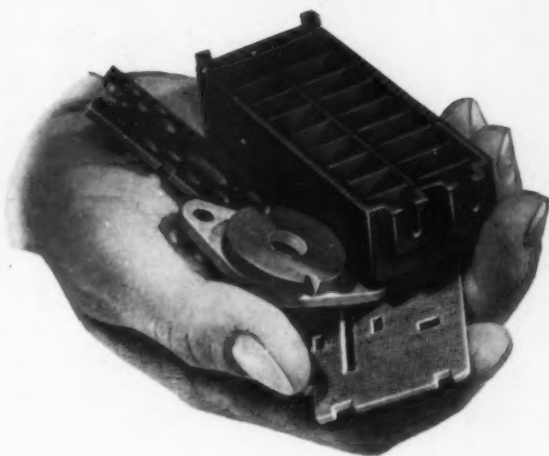
Current base prices represent an increase of 10% over prices quoted a year ago. During the same period the increase in the index of wholesale prices for all commodities compiled by the Bureau of Labor Statistics was 20%. This would indicate that price advances on steel during the past year have not been excessive.

At the moment there is nothing in sight to indicate any general price (Please turn to page 320)



*Mr. Prime Contractor
Mr. Sub Contractor*

LOOK TO
The **RICHARDSON COMPANY**
FOR HELP ON PLASTICS
FOR YOUR DEFENSE ORDERS



● If you have a puzzling plastics problem, consult The Richardson Company. The extensive services of its research, design, and engineering departments are offered you without cost or obligation.

Richardson engineers have a broad background in the plastics industry. For many years they have been co-operating with manufacturers in the selection or development of the correct plastics materials, choice of the proper manufacturing process, and actual production of the plastics part. Richardson's molding, laminating, and fabricating experience assure you a thorough handling of your plastics problem from beginning to end.

**1 MATERIALS TO MEET
GOVERNMENT REQUIREMENTS**

The Richardson Company has extensive experience in the volume production of materials made to meet government requirements. In addition, Richardson develops new materials for special applications.

**2 FACILITIES FOR MOLDING
AND LAMINATING**

Richardson is one of the few companies that have the engineering experience and production facilities to do both molding and laminating, and to produce molded laminates and post-formed laminates.

3 SIX PLANT LOCATIONS

The Richardson Company operates large, modern plants at 6 widely separated locations: Melrose Park, Ill.; Indianapolis, Ind.; Newnan, Ga.; New Brunswick, N. J.; Tyler, Tex.; and Ogden, Utah.

The **RICHARDSON COMPANY**

FOUNDED 1858—LOCKLAND, OHIO

2791 Lake St., Melrose Park, Illinois (Chicago District)

INSUROK
Laminated and Molded Plastics

SALES OFFICES: Cleveland • Detroit • Indianapolis • Lockland, Ohio • Los Angeles
Milwaukee • New Brunswick, (N. J.) • New York • Philadelphia • Rochester • St. Louis





Johnson Quality Wire Is an Economy

For your processes it will pay you well to specify wires made in this specialty mill. You will save time, maintain quality. JOHNSON makes wire as fine as .003".

- MUSIC SPRING WIRE.
- VACUUM HOSE WIRE.
- AIRCRAFT CABLE WIRE.
- HIGH CARBON ROPE WIRE.
- HARD DRAWN SPRING WIRE.
- OIL TEMPERED SPRING WIRE.
- HIGH TENSILE GALVANIZED STEEL WIRE.
- HOSE REINFORCEMENT WIRE (BRAIDED TYPE).
- FLAT AND HALF OVAL SPECIAL SPRING WIRE.
- BRUSH WIRE FOR HAND AND POWER BRUSHES.

If it's steel wire—Johnson makes it better

JOHNSON

JOHNSON STEEL AND WIRE COMPANY, INC.

WORCESTER 1, MASS.

New York Philadelphia Cleveland Detroit Akron Chicago
Atlanta Houston Tulsa Los Angeles Toronto

Steel Industry Raises Its Sights

(Continued from page 318)

revision in the short term future. Speculation about finished steel prices for the remainder of 1951 revolves mostly around government policy on wages. The problem of wage stabilization now being thrashed out in Washington is fundamentally a battle between economic wisdom on one side and political expediency on the other. If economic wisdom comes out on top, steel prices could conceivably remain stabilized at present levels. If political expediency wins out, higher steel prices will be almost inevitable. We can see no hope of lower steel prices until the entire complicated problem of inflation is much nearer to solution.

♦ ♦ ♦

Influence of Materials on Equipment Design

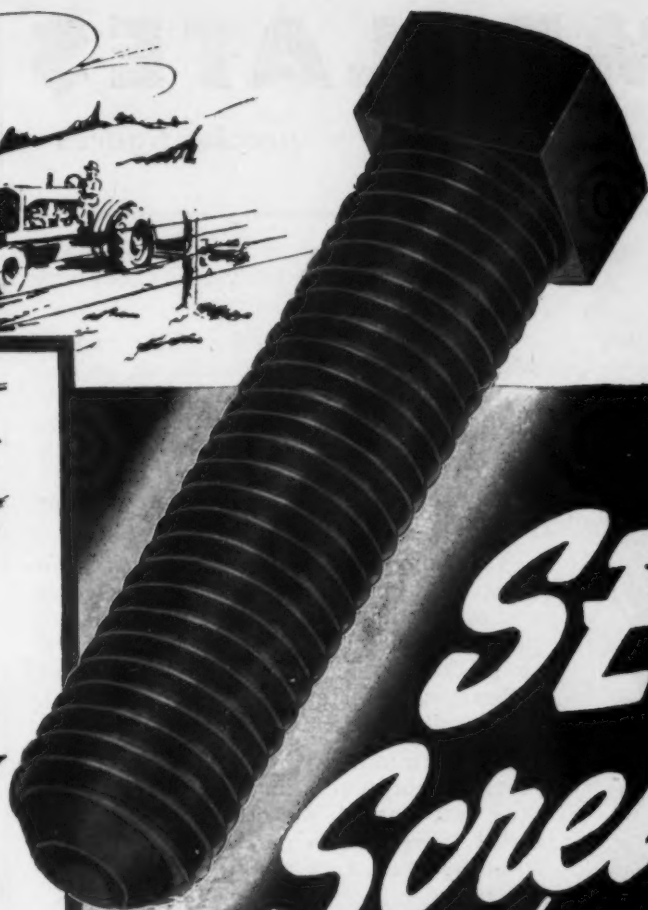
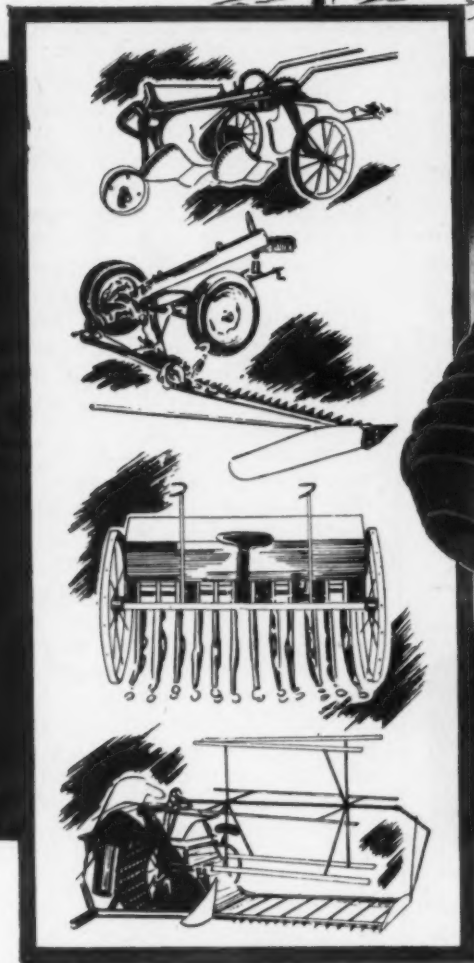
(Continued from page 102)

of equipment that is almost wholly dependent for their present-day success upon new materials. This is true whether the gas turbine is used on a jet airplane, a locomotive, in a central station, or in a gas pipe line pumping station. My college text books gave 750 degrees as the top operating temperature for turbine blading materials. At this temperature the gas turbine will just run itself without putting out any useful power. As the operating temperature is increased, the efficiency of gas turbines also increases and at present permissible metal temperatures which now approach 1500 degrees, the gas turbine is finding a real place for itself as a prime mover.

Obviously the materials in the blades and discs of gas turbines are the keynote items which determine successful performance. For that reason, Westinghouse, over a period of 15 years, has had an active development program under way on these high temperature metals.

The development of a material of this type requires striking a delicate balance between high temperature properties, cost, and strategic materials content. In Westinghouse, the experience of the user (represented by the Turbine Division), pilot plant manufacturing organization (our Materials Engineering Department), and Research Laboratory, all pooled their activities and experience toward a common end. As a

(Please turn to page 322)



SET Screws

by FERRY CAP

TO hold parts rigidly in place—and to provide for quick, easy adjustment—makers of farm equipment and other machinery manufacturers specify "Ferry Cap Set Screws."

These set screws are case hardened—the hard point *bites in* and *holds*. They fit perfectly and respond readily to adjustment needs.

"Ferry Cap Set Screws" are expertly made by the first company to produce Cup Point Set Screws by the cold upset process of manufacture. They embody the skill and experience gained in 43 years of precision manufacturing.

Square head and headless—cup and oval point—case hardened—sizes $\frac{1}{4}$ " diameter and larger. Carried in stock for immediate shipment.



PIONEERS AND
RECOGNIZED SPECIALISTS,
COLD UPSET
SCREW PRODUCTS
SINCE 1907

The FERRY CAP & SET SCREW Co.

2165 SCRANTON ROAD CLEVELAND 13, OHIO

CAP AND SET SCREWS • CONNECTING ROD BOLTS • MAIN BEARING BOLTS • SPRING BOLTS AND SHACKLE BOLTS • HARDENED AND GROUND BOLTS • SPECIAL ALLOY STEEL SCREWS • VALVE TAPPET ADJUSTING SCREWS • AIRCRAFT ENGINE STUDS • ALLOY STEEL AND COMMERCIAL STUDS • FERRY PATENTED ACORN NUTS

NAMEPLATES

any design • any quantity • precise figures



Whatever type, size, or quantity of nameplate you desire, take advantage of our long experience and new facilities.

We can supply etched or lithographed nameplates to your specifications, in aluminum, copper, steel, stainless steel—finished in lacquer, nickel, chromium, or silver. In addition to nameplates with all the customary kinds of black or colored markings, we can supply self-luminous, fluorescent, or phosphorescent nameplates.

This company has been making instrument and timepiece dials for many years and applies its characteristic care to nameplate manufacture as well. We are equipped to produce either large-quantity runs of ordinary nameplates or small runs of special, high-accuracy scientific nameplates.

Get our quotation on your present nameplate. Possibly we can improve its design and save you money! Write Department 901, United States Radium Corporation, 535 Pearl Street, New York 7, N. Y.

Influence of Materials on Equipment Design

(Continued from page 320)

result of this program, extending over many years, an alloy for gas turbine disc has been developed. This product is known as *Discaloy* and there is a chance of it being used in the entire jet engine field because of its low strategic alloy content as measured against its performance at high temperatures.

Throughout this presentation, we have indicated a trend toward obtaining light weight equipment. I can recall when purchasers used to penalize us for having it light weight, but times have changed and we manufacturers may more and more expect to be penalized because our equipment is heavier than necessary. From our contacts with the aircraft industry, we are becoming increasingly weight conscious, and in years to come I venture to predict that we may look ahead to a "Light Weight Age".

We can machine parts like shafts to tolerances as close as one ten-thousandth of an inch, but when we deal with materials, we are concerned with perhaps a five to one variation between supposedly identical items. The old adage—"A chain is no stronger than its weakest link"—still holds true, and the designer can only utilize the minimum property. By carefully controlling the manufacture of our key materials, the minimum property can be reliably increased and lighter weight and lower cost designs can be made.

1 1 1

Purchasing Looks at Management

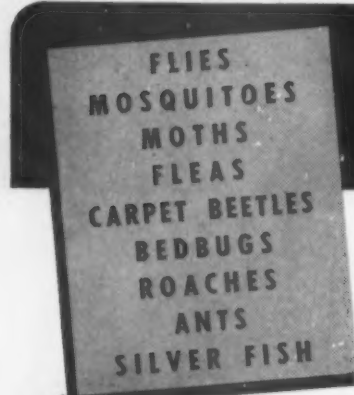
(Continued from page 98)

were practically stable during that three-year period, and firms employing 500 and over showed a drop in their percentage of the total manufacturing employment. Significantly, the largest size companies, those employing 1,000 or more, showed the biggest drop—down from 43.6% to 37.7% of the total. Gains are being made by little businesses while the big ones actually are losing ground in employment ratios.

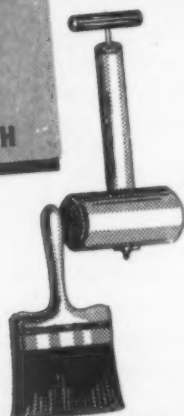
How Business Operates

Business—both big and little—has made our country a giant among the nations of the world, and has given our people the high—

(Please turn to page 324)



CONTAINS
5% DDT



FIGHT THEM WITH DOUBLE-ACTION PERMAX!

SPRAY Permax into the air (one cupful to every 8,000 cubic feet). Direct killing action approaches 100%. Permax contains a special solvent which prevents DDT crystallization, plus a rust inhibitor to protect sprayers and containers.

BRUSH Permax on walls, in corners, along moldings for long-lasting residual effect. One gallon easily covers 950 square feet.

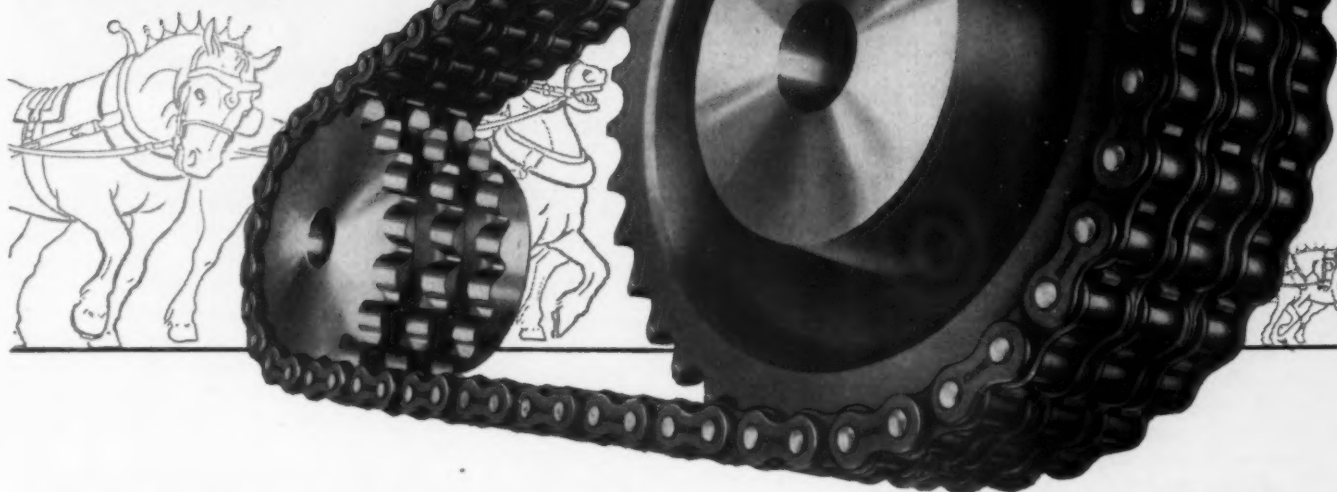
Let your
DOLGE SERVICE
MAN demonstrate,
or write for
literature.

PERMAX
dependable
DOLGE
WESTPORT, CONNECTICUT



From Fractional Horsepower

**to
Hundreds of
Horsepower**



Whitney Chain Drives Simplify Design—Cut Costs

No matter what your drive problem, be it small movie cameras, machine tools or earth movers, you will find a Whitney Chain Drive to fill the application exactly.

And what's more, these adaptable drives offer opportunities for important cost reductions and improved performance. *For example*—Whitney Chain Drives operate equally well on long or short centers. They will drive single or multiple shafts, provide accurate timing or reversal of direction. Standard attachments, built into the chain, offer still more opportunities for economical application possibilities.

And remember, Whitney Chains . . . *the all-steel drives* . . . deliver *full rated* power, smoothly and dependably. Their positive grip transmits constant, uniform speed. They are easily and quickly installed,

reducing costly down time. No removal of shafts or bearings necessary. Alloy steel construction assures maximum service with minimum maintenance.

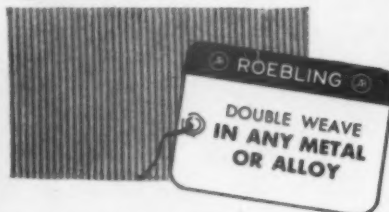
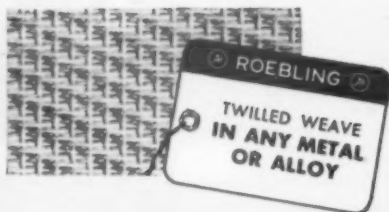
WHITNEY ENGINEERING SERVICE—In addition to the service facilities of more than 130 Distributors, Whitney maintains a network of 15 Field Engineering Offices, located throughout the country. From the complete line of Roller, Silent and Conveyor chains, Whitney engineers can recommend the proper type of drive for your application . . . the chain drive which will give you the best service at lowest cost. Consult your nearest Whitney field office or write us direct for catalog and complete information.

WHITNEY CHAIN COMPANY

207 Hamilton Street, Hartford 2, Connecticut

FILTER CLOTH

**Any weave you want...
in exactly the right
metal or alloy!**



ROEBLING makes Metallic Filter Cloth in the particular weave and mesh best suited for your requirements. Better yet, Roebling can furnish each weave in any metal or alloy which is ductile enough to meet required conditions. And it's the combination of the right weave with the right wire that gives users topmost filtering efficiency *plus* longest performance life and dollar savings!

Whatever your needs for rigidity, flexibility, precision, or for resistance to abrasion, vibration, heat or corrosion, Roebling can help. Mail coupon for full information.

WOVEN WIRE FABRICS DIVISION

John A. Roebling's Sons Company
Roebling, New Jersey



Woven Wire Fabrics Division
John A. Roebling's Sons Co., Roebling, N. J.
Gentlemen: Please send me full information
about Roebling Metallic Filter Cloth.

Name.....
Company.....
Address.....
City.....State.....

ROEBLING

Purchasing Looks at Management (Continued from page 322)

est standard of living ever known to man.

Big business needs small business, and small business needs big business. United States Steel buys regularly from 54,000 suppliers, at least 50,000 of which are little concerns. It sells to about 110,000 customers, more than 90,000 being very little fellows. It is hardly necessary to point out that these 50,000 little fellows need U. S. Steel for a customer, just as Steel needs its 90,000 little customers.

We need to get across to people some notion of the kind of jobs big business performs in raising our living standards. I know of one example in my own company which I would like to mention, and I choose it not to brag, but simply because I am familiar with it. We make nylon fiber that goes into dresses. We don't make dresses, just the fiber. For the fiber in the average dress, we get about \$2.38. The dress, when it appears on a rack in the store, sells for about \$49.95. The difference between the two figures, or 96% of the total price, is divided among other people—the spinner, the throwster who puts a twist in it, the weaver, the finisher, the designer, the cutter, the retail store that finally puts it on Milady's back.

Those people who get the other 96% of the final cost of the dress are little businesses.

Now, Du Pont spent \$27 million and 12 years of experimentation and plant development before it was able to get nylon into satisfactory large-scale production in a commercial plant. Even then there was no assurance that the product would be a success. The public still had to accept it and demand it before that 27-million-dollar risk could pay off.

Could any of those people who got the other 96% of the purchase price on the dress afford to risk that kind of money to produce a new type of yarn? If they could, they wouldn't be little business; they would be big business.

Nylon was the first truly synthetic fiber. Du Pont came out with it in 1939. Yet today, only 12 years after that revolutionary development, there are eight other synthetic fibers being produced by 15 manufacturers in 19 plants. All of these new synthetic fibers compete with nylon—and it is strong com-

(Please turn to page 326)

Compact
Complete



Yes, the CONOVER-MAST PURCHASING DIRECTORY is compiled especially for the industrial buyer—only listings and product facts on the machinery, parts, supplies, and materials needed by industry. All nonindustrial listings and advertisements are rigidly excluded—that's why it's so compact, easy to keep handy and use, yet complete. Besides, it has 35 pages of general information and tables for the buyer which he will not find in other directories.

Use the CONOVER-MAST PURCHASING DIRECTORY—you'll soon find that the complete cross references make it the easiest and quickest way to locate the suppliers of any item you buy. The more you use it, the better you'll like it.

The Most Convenient Industrial
Buyers' Guide for Production, Pur-
chasing, and Engineering Executives

**Conover-Mast
PURCHASING
DIRECTORY**

737 North Michigan Ave., Chicago 11, Ill.

COPPER ALLOY BULLETIN

REPORTING NEWS AND TECHNICAL DEVELOPMENTS OF COPPER AND COPPER-BASE ALLOYS

Prepared Each Month by BRIDGEPORT BRASS COMPANY "Bridgeport" Headquarters for BRASS, BRONZE and COPPER

Proper Annealing for Cost Reduction

Work-hardened metal can be softened by annealing—that is, by raising its temperature high enough to affect its microstructure. Different degrees of softness are obtained by controlling the temperature which the metal attains in the furnace and the length of time it is exposed to the heat. Under the microscope a piece of annealed metal that has been prepared by polishing and etching for microscopic examination appears to be made up of irregularly shaped crystals or grains—the higher the annealing temperature, the larger the crystals, the softer the metal, and the greater its elongation or ductility.

Annealing Hints for Fabricators

Variable factors such as the weight and distribution of load, size and shape of article and/or sequence of anneals, type and condition of furnace play such an important part in maintaining uniform metal temperature that it is impossible to set up specific rules for the fabricator on time and temperature for annealing copper and its alloys.

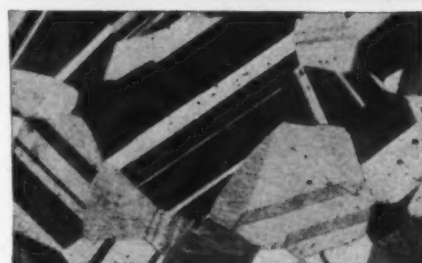
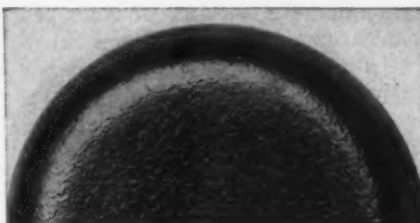
The table, shown below, on suggested temperatures should only be used as a guide.

Included also in these variables are the amount and method of cold-working, previous grain size and severity of operations to follow. Because of these variables, it is advisable to experiment

with sample lots to determine correct time and temperature for annealing before setting up a schedule for volume production.

Danger of Too High Temperature

Extra large grain size and orange peel effect are usually products of temperatures that are too high with subsequent increase in finishing costs. Excessively high temperatures will also increase the amount of oxidation of the



Orange-peel surface on the bottom of drawn brass cup was caused by excessively large grain structure resulting from annealing at too high a temperature. Micrograph: mag. 75 x etch NH_4OH and H_2O .

metal (if non-atmosphere controlled furnaces are used) and thereby necessitate longer pickling and dipping operations, with the associated danger of pitting and thinning of the material.

It is safer to anneal at the lowest temperature possible. Work can always be returned to the furnace if not annealed sufficiently, but the damage done by too high a temperature cannot be corrected.

Good Annealing Practice

Thorough cleaning of work to remove drawing compounds before annealing especially at low temperatures, will help to maintain cleaner surfaces. Dirt and dust picked up from the air and held on the work by compounds, can also produce stains and scale which if not completely removed, will cause scratching of work and dies as well as loading of tools.

The ability to obtain uniform metal temperatures in the work being treated is essential. For this reason convection-type annealing furnaces are widely used for temperatures from 1200° F and lower. By placing the thermocouple at the hottest location of the incoming gases and being careful not to exceed the desired temperature is an assurance metal will not be overheated.

The practice of speeding up the annealing operation by first operating the furnace at temperatures considerably above the desired annealing temperature is dangerous because the top or edges of the load may become overheated while the rest of the load is coming up to the desired annealing temperature. In other words, there is time lag in heat penetration. It is advisable to bring the furnace to heat before starting the day's annealing operations. This method reduces the danger of local overheating and facilitates uniform heating.

The influence of time in an annealing operation after the metal reaches the desired temperature throughout does not seriously increase grain growth or softening and this factor permits uniformity of heating in convection furnaces even when section or portions of a load are of uneven mass. Direct-fired furnaces, on the other hand, are usually operated with a thermal head and are more susceptible to uneven heating of a load, especially if the masses are uneven.

Suggested Annealing Temperatures for Fabricated Articles

Approximate Metal Temperatures

Material	Alloy No.	Anneal for Additional Cold Working	Fine Grain Anneal for Finishing	Stress Relief Anneal
Copper	102	750- 950F	650- 800F	400F*
Red Brass—85 copper, 15 zinc	85	900-1150F	750- 900F	400F*
Cartridge Brass—70 copper, 30 zinc	37	850-1100F	700- 850F	400F*
High Brass—66 copper, 34 zinc	1	850-1100F	700- 850F	400F*
Commercial Bronze—90 copper, 10 zinc	25	925-1175F	775- 975F	400F*
Silicon Bronze—97 copper, 3 silicon	632	1000-1200F	925-1000F	400F*
Silicon Bronze—98 copper, 2 silicon	609	1100-1200F	925-1000F	400F*
Phosphor Bronze—Grade A—94.35 copper, 5.5 tin, 0.15 phosphorus	36	1080-1200F	900-1050F	400F*
Nickel Silver—18% Grade A—65 copper, 18 nickel, 17 zinc	565	1100-1300F	1050-1150F	400F*

*Stress Relief Annealing Temperatures and Time depend upon the amount of cold working on the part and the alloy. A nominal temperature of 400F for a one hour anneal may be tried and the parts so treated then checked for residual stress by a mercurous nitrate test. Should failure occur, a higher temperature would be indicated.

TO SAVE
MONEY?

DARNELL CASTERS & WHEELS

Reduce floor and equipment wear to a minimum — increase employee efficiency with the casters that "always swivel and roll."

A SAVING AT
EVERY TURN



DARNELL CORP. LTD.

LONG BEACH 4, CALIFORNIA

60 WALKER ST., NEW YORK 13, N.Y.

36 N. CLINTON, CHICAGO 6, ILL.

Purchasing Looks at Management

(Continued from page 324)

petition. You can see that there never is any assurance that a new product will remain long in a class by itself.

There are people in America who are trying to establish more and more centralized control over American life. "Let the government start," they say, "by taking over certain industries and services—the doctors, the railroads, the electric light and power companies." They don't say this is socialism—but they mean it to be.

We find in our midst many vocal and politically adroit people who are working tirelessly toward just that kind of camouflaged enslavement. These people must be shown that they are working for their own enslavement, that they are working against their own welfare, as well as against the welfare of their fellow Americans. American industrial management is recognizing its duty to take up this task. It is management's foremost order of business.

In this issue lies the destiny of our whole heritage as a free people.

1 1 1

Fair Labor Standards

(Continued from page 128)

For example, in *Tri-State Plastic Molding Company v. Ruzak Industries, Inc.*, 181 Fed. (2d) 809, it was shown that a distributor entered into a contract with molding company for the manufacture of plastic boxes, as containers for fruit cakes. The distributor needed the boxes to fill an order it had taken from a bakery company. Soon after this order was filled the distributor made a contract with another company to copy the molding company's boxes. The molding company then sued the distributor for damages claiming that the latter had practiced "unfair competition" by copying its boxes.

The higher court refused to hold in favor of the molding company saying that the testimony failed to show that the distributor had directly or indirectly represented to customers that these particular boxes were manufactured by the molding company.

The higher court explained further that since the plastic boxes for cakes was *not* protected by patent laws, anyone can make and sell the same.

Approved

ARMY, NAVY AND AIR FORCE PRESERVATION AND PACKAGING MATERIALS

... many in Stock
for Immediate Delivery

Let us be your expert on government packaging requirements. Call on us to help you figure your next bid. Count on us to supply you with the right material at the right time for your government orders.

We have specialized in packaging materials for more than 15 years. During the last war our complete facilities were devoted to supplying industrial and government packaging materials to meet armed service specifications.

Write for our lists classifying Preservation and Packaging Materials by specification number and usage under JAN-P-116, AN-P-13A and other government packaging specifications.



YOUR ASSURANCE
OF QUALITY

PACKAGING DIVISION

E. W. Twitchell Incorporated
2877 N. THIRD ST., PHILA. 33, PA.

STEEL CASTINGS

More
and
more
P.A.'s are
learning



With over 35 years' experience in turning out top quality steel castings, Atlantic offers the know-how, facilities, service and cooperation that really takes a burden from the shoulders of our customers' purchasing agents. Prompt deliveries are another advantage you get in dealing with Atlantic.

We are equipped to produce steel castings from 5 to 15,000 pounds. Our railroad siding helps speed deliveries. Let us give you more details.

Are you getting our house organ "Atlantic Axioms"? It's informative—write for it on your business letterhead, please.



Sixth and Lloyd Streets Chester, Pa.
Chester 3-4181



Look what's ahead-Southwest

Diesels...Diesels and more Diesels to give you better, faster, smoother freight and passenger service.

1951 will see us *really* on the run... on the run with Diesel power on all major freight and passenger trains.

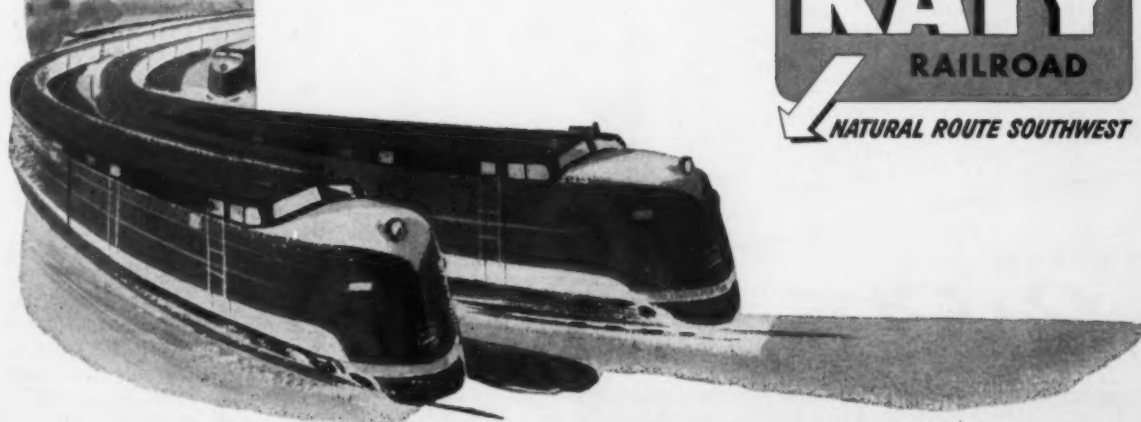
Yes sir, we're "re-doing" Katy service... blending the MODERN and the TRADITIONAL... the modern, heavy duty smooth hauling efficiency of new, giant road Diesels with the traditionally reliable Katy service the Southwest has known right down the line, for almost 80 years.

And, that's not all. There'll be more Diesel yard switchers working to shave minutes from terminal transferring times. There'll be many equipment and

service improvements to speed your receiving dates... simplify your shipping schedules.

The Katy is quickening the pace. Stepping up the action for a vigorous Southwest of an alerted nation. In 1951 we continue expanding our service to you... This is our answer to your transportation problem.

Your local Katy representative will be glad to tell you even more about Katy's many new plans... and how you may benefit by shipping Katy, Southwest.



Red Stripe^{*} Brushes Cost Less to Use... Do a Top-Notch Job Every Time!

** Made by the manufacturers
of PITTSBURGH'S famous
Gold Stripe BRUSHES*



MASTER painters everywhere are turning to Pittsburgh's **RED STRIPE** brush. And there's a good reason... hog's bristle is expertly combined and blended with scientific Neoceta bristle. Both wear at the same rate... and that means smoother, neater, faster work every time!

FOR THE ADDRESS of the Pittsburgh dealer nearest you, write: **PITTSBURGH PLATE GLASS COMPANY, Brush Division, Dept. M-3, 3221 Frederick Ave., Baltimore 29, Maryland.**

PITTSBURGH



Red Stripe BRUSHES

BRUSHES • PAINT • GLASS • CHEMICALS • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

50-FOOT STEEL TAPE RULE WITH AUTOMATIC REWIND

Fifty-foot steel-tape rule which rewinds itself automatically, has been introduced by the Master Rule Manufacturing Co., Inc., Middletown, N. Y. It is known as the Longboy, and the makers state a 100-foot design will be announced soon.

It takes but 10 seconds to rewind the full 50 feet. The Longboy rewinds with a constant retracting torque whether the full 50 feet or only the last inch is out—a feature made possible by incorporation of the new negator type spring in its planetary coiling mechanism. Simple thumb pressure on the center plate-button starts the rewind, and release of this pressure stops the action instantly. The tape is $\frac{3}{8}$ " wide and made of high-carbon spring steel, nickel plated. Graduations are black for easy reading. The case is of formed steel, covered with fabricoid, diameter 5 inches. Weight of the Longboy is 23 ounces.

PLASTIC FINISH DULLS GLARE OF STAINLESS STEEL

A new plastic synthetic finish, VB 248, developed to permit dulling the reflecting surfaces of stainless steel in guided missiles, aircraft instruments and other apparatus, is announced by the United Lacquer Manufacturing Corp., Linden, N. J. The new finish is said to overcome the problem of providing an effective coating that would adhere to the highly polished stainless steel used in various aircraft devices. VB 248 was originally developed in black and in a dull finish. Because of its good adhesion to highly polished surfaces it is expected to find applications where elimination of glare is not the primary objective. In such cases it may be prepared in all colors, in a semi-gloss or gloss finish. VB 248 takes a baking temperature of 275 deg. F. for one hour.

THAW CARLOADS OF FROZEN ORE WITH STEAM

The United States Steel Company's South Chicago plant has begun thawing an experimental shipment of 50 carloads of frozen ore from the Mesabi range in Northern Minnesota. It is the first time that ore has been shipped by rail in winter. Normally the ore is moved by boat during the Great Lakes navigation season, with stockpiles carrying the mills over the winter months. It is planned to ship 2,000,000 tons this winter to plants in Chicago, Gary, Ind., Pittsburgh and Youngstown. The thawing process at Chicago consists of piercing a load of ore with a steel jet and applying steam from four old locomotives leased from the Burlington Railroad. The steam works through the load and drives out the frost. It takes about eight hours to thaw out a car of ore. Prior to shipment by the Oliver Iron Mining company, another U. S. Steel subsidiary, the ore is treated at the mines with calcium chloride to retard freezing. U. S. Steel plans to continue regular shipment from the mines until March 15. The Great Lakes usually open for navigation in April.



What's the "BEST BUY" in Wire Rope ?



**LET YOUR RECORDS
TELL YOU!**

The only way to determine a wire rope's value is to record the actual work it does . . . in terms of ton-miles, yards of rock moved, cars of coal hauled, etc. We'd like to have you keep such records on Bethlehem rope and any competitive ropes you may be using. Make a regular practice of it, so that you'll *know* how much each rope has done before it's scrapped.

At intervals, study these figures. They're your real yardstick of comparison. When you divide the purchase price of a rope by the total work it's done . . . expressed in tons, yards, or other units . . . the real cost of the rope becomes evident.

There's no truer method of determining today's best buy in wire rope. That's why we urge that you stack Bethlehem rope against the field and make your own comparisons—based on your own personal records.

Is there any better way of inviting you, the customer, to see for yourself? Is there any better, fairer way of laying our product right on the line?

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation. Export
Distributor: Bethlehem Steel Export Corporation





where **HIGH STRENGTH** is essential

RITCO Bright Finish Forgings are a wise choice. RITCO Forgings are smooth, dimensionally accurate, and free of flash—they're supplied in steel and non-ferrous metals in weights from ¼ lb. to 15 lbs. Also available: Special Bolts, Studs, and Nuts • Grinding • Roll Threading • Heat Treating.

Send blueprints and specifications for free estimates. RHODE ISLAND TOOL COMPANY, 148 West River Street, Providence 1, R. I.



Exclusive New England Representative
for Cleveland Cap Screws.

SERVING AMERICAN INDUSTRY SINCE 1834

FIRE NOZZLE PROVIDES FOAM SPRAY OR FOAM STREAM

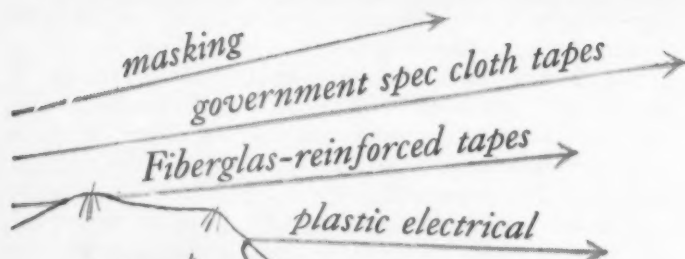
Fire fighting nozzle known as the Aero-Foam Spray-Stream nozzle, which by means of an easy-to-operate bolt action, provides the ideal means of combatting a serious spill fire or a distant hazard, is being marketed by National Foam System, Inc., West Chester, Pa. The nozzle makes it easy to instantly change from a closely-knit foam spray to a long-range foam stream. Should the heat become too intense for the operator when using the straight stream, he can switch at once to the protective curtain of the spray. The spray-stream nozzle is light in weight and eliminates the necessity of carrying spray attachments. It can be used with either pre-mix or a pick-up tube.

1 1 1

KIT FOR 3-DIMENSIONAL PLANT PLANNING

Designed to demonstrate the values obtained from three-dimensional planning, "Visual" Planning Equipment Co., Inc., Oakmont (Allegheny County), Pa., is introducing a 200-piece kit of machines, benches, trucks, conveyors, materials handling equipment, office and toilet equipment together with a 12" x 18" lucite planning board, columns and layout tape. The kit will not plan a specific plant, but will enable the user to test the merit of this type of planning. Further details and price information available on request.

TUCK-TAPE ADHESIVE TAPES FOR INDUSTRY



Samples of these or 1,000 other made-to-order adhesive tapes on request.

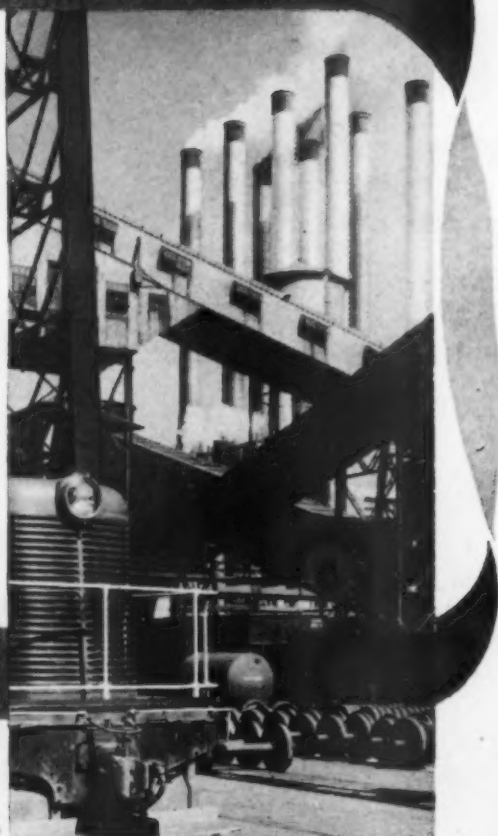
TUCK-TAPE

Our research laboratories are available without cost for your industrial tape and adhesive problems.

IN U.S.A.: TECHNICAL TAPE CORPORATION New York 53, N. Y.

IN CANADA: CANADIAN TECHNICAL TAPE, LTD. 5541 Papineau Ave., Montreal

Fast shipments from plants in New York • Montreal — warehouses in Los Angeles • Chicago • Kansas City



COIL SPRING SAYS:
"You'll be a jump ahead,

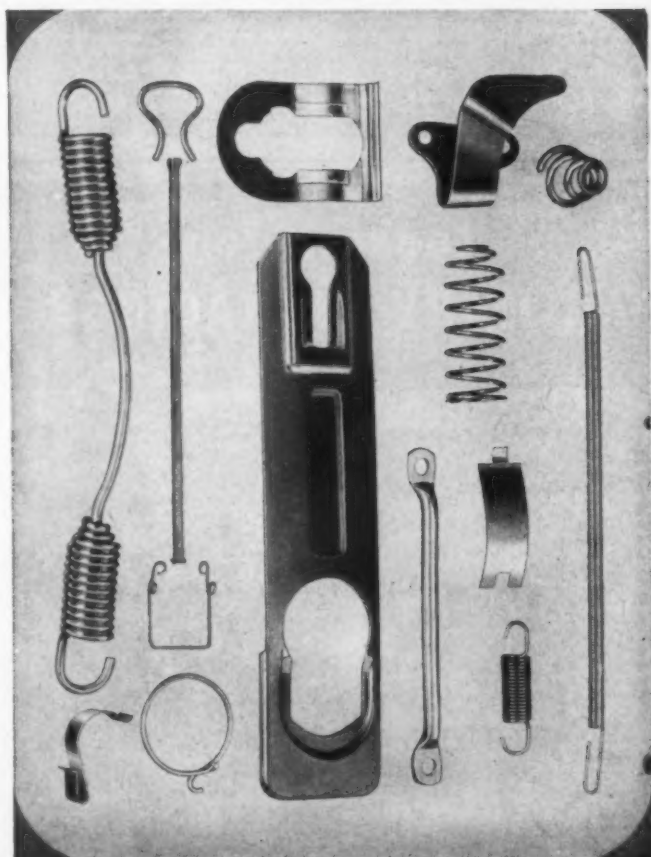


**if you specify
our springs now!"**

● A U. S. Steel Wire spring will meet your specifications exactly. Our springs are now giving satisfactory service in all types of applications. We have the experience, the equipment, the engineering know-how to produce for you economically. Why not let us quote today?

**Producing Clutch Pressure Springs
... Clutch Dampener Plate Springs**

No order too large or too small



The U. S. STEEL WIRE SPRING Co.

7800 FINNEY AVE. • MICHIGAN 1-6318

CLEVELAND 5, OHIO

MORSE DRIVE SHAFTS

TRANSMIT POWER

ECONOMICALLY

RELIABLY

SAFELY

Made to order for your toughest applications

Flexible Morse Drive Shafts provide a cushioned drive between separated units. They provide torsional flexibility, absorb shock, and isolate vibration while transmitting power noiselessly, dependably, safely, and economically. Since there is no metal-to-metal contact, lubrication is not required. Four of the five series accommodate end float and provide full universal action.

Look over the condensed descriptions of Morse Drive Shafts on this page. In addition to the standard sizes listed below, special drive shafts can be made for unusual applications. Write us for more complete information. Morse Chain Company, Dept. 146, 7601 Central Ave., Detroit 8, Michigan.

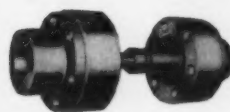


Series T. From 13 to 725 lbs.-ft. torque capacity. Inter-flange distance from $3\frac{1}{8}$ " to 84". HP from .25 to 13.80 per 100 RPM.



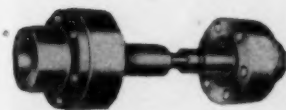
Series S. From 84 to 725 lbs.-ft. torque capacity. Inter-flange distance from $10\frac{5}{16}$ " to $17\frac{1}{8}$ ". HP from 1.60 to 13.80 per 100 RPM.

Series ST. From 84 to 725 lbs.-ft. torque capacity. Inter-flange distance from $11\frac{3}{8}$ " to 84". HP from 1.60 to 13.80 per 100 RPM. (Not illustrated.)



Series RS. Provides added capacity. From 158 to 2127 lbs.-ft. torque capacity. Inter-flange distance from $10\frac{5}{8}$ " to $14\frac{5}{8}$ ". HP from 3 to $40\frac{1}{2}$ per 100 RPM.

Series RT. From 158 to 2127 lbs.-ft. torque capacity. Inter-flange distance from $11\frac{1}{8}$ " to 84". HP capacity from 3 to $40\frac{1}{2}$ per 100 RPM.



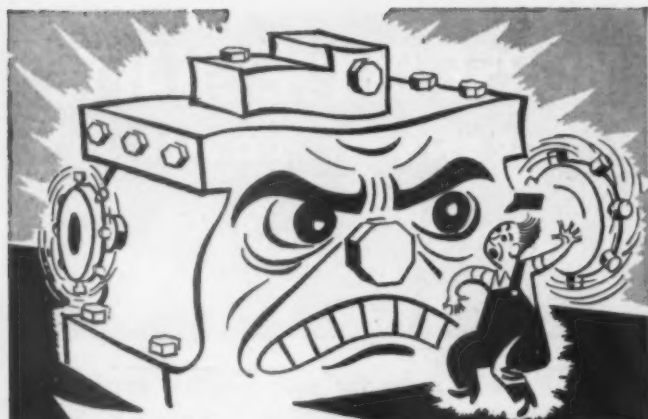
M=PT

**Morse means Power
Transmission**

MORSE

MECHANICAL
POWER TRANSMISSION
PRODUCTS





**Is Your Machine
a Monster?**
Make it Safe! Make it Sell! With
Western flush-to-surface fasteners



Why not make your product safe and sightly by streamlining it with modern, flush-to-surface Western Socket Cap and Set Screws? It's a sensible way to add sales appeal and safety to your product—at no extra cost.

Machined from heat-treated alloy, Western Socket Screws are so strong you need fewer of them—therefore fewer to buy. And they cut assembly time and expense because they're precision made, fit instantly—no delays, no rejects.

Make them like your product better and cut down your assembly costs with Western Socket Cap and Set Screws. Write for the informative Western Socket Screw Catalog and prices — write now!

**Western Automatic
Machine Screw Company**

736 Lake Ave., Elyria, O.

Precision Parts and Assemblies Since 1873

ABBOTT BALLS



do the job RIGHT HERE!

Abbott Bearing Balls, used as a valve in millions of grease fittings, do their part to keep civilian and military transport equipment effectively lubricated.

Every Abbott Ball — DEEP HARDENED with a mirror-like, glass hard finish — is shock resistant and performs efficiently under high load factors. Use Abbott . . . the all round ball. Abbott Catalog-Manual contains full information on ball sizes and uses. Write for it!



THE ABBOTT BALL COMPANY
15 Railroad Place, Hartford 10, Conn.

**Looking for
MILITARY PACKAGING?**

DOBECKMUN

*
"Metalam" and "Benbar"

Government approved for:



JAN-P-117, Types I and II
Grade A, Classes A, B, C

JAN-B-121, Types I and II
Grade A, Class 1

JAN-P-131, Amendment 3, Type I
Classes A and B

AN-B-20, Type II
(MIL-C-6056) (MIL-E-6060)

Consult us on your needs for flexible packaging, either with government-approved materials or engineered to your specific requirements.

THE DOBECKMUN COMPANY

*Trade Mark

Cleveland 1, Ohio

CREATIVE CONVERTERS OF FILMS AND FOILS

TUF-STUF'S

best proving
ground is
in the air

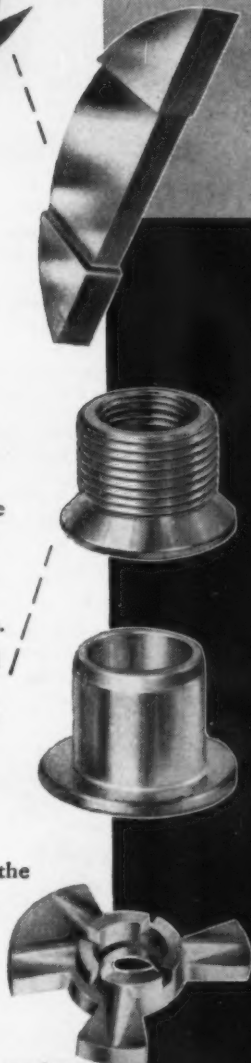


It pays to specify
TUF-STUF
aluminum bronze
alloys for parts
that must stand up

Because they are both light and tough, TUF-STUF aluminum bronze alloys have proven invaluable in America's aircraft as valve-seat inserts, spark plug inserts, valve guides, gears and other vital parts.

If your product requires machined parts that are strong but light, resistant to corrosion, long wearing and resistant to oxidation even at high temperatures, then TUF-STUF is the right alloy for the job.

TUF-STUF alloys are furnished in the form of forgings, rods and screw machine parts. They fill Federal Specification QQ-B-666, Grade B, and several other variations. Because of the increased use and demand for both aluminum and copper, jobs carrying a Defense Order Number are receiving first consideration.



57

MUELLER BRASS CO.

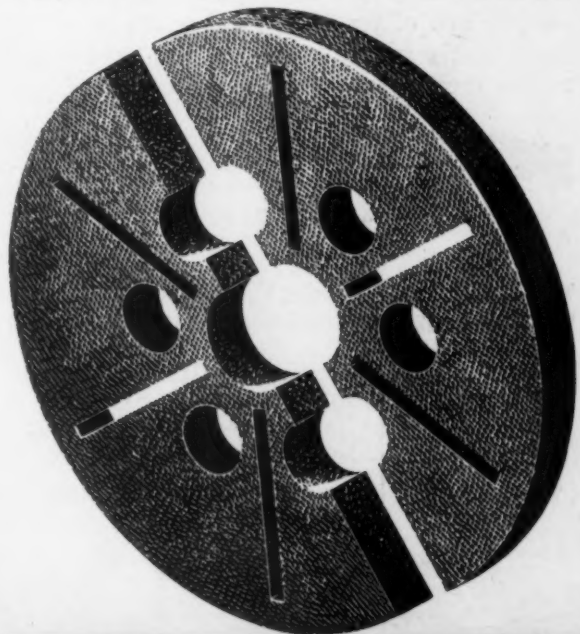
PORT HURON 21, MICHIGAN

P.V.* APPROVAL

*Plus
Value



Western Felt users over a long period of years have placed their stamp of approval on a long list of its products. They know from experience the "plus value" in every Western Felt component part. Highest precision in its processing and cutting produces a uniformity that minimizes rejections—prevents failure of the finished product from felt causes. They are available from wool softness to rock hardness—never lose shape—do not ravel or fray—resist oil, water, age—are resilient, flexible, compressible—may be cut to close tolerances.



WESTERN

4035-4117 Ogden Ave., Chicago 23, Illinois

Branch Offices in Principal Cities

**Felt
WORKS**

Manufacturers and Cutters of Wool Felts

Acadia Synthetic Products Division, WESTERN FELT WORKS,
Processors of Synthetic Rubbers — Sheets, Extrusions, Molded Parts.



This fine soft wood is one of the Associated Woods produced by member mills of the Western Pine Association. It is fine-textured, and although light in weight, is very strong for its weight. Carpenters like it because it is easy to work, nails without splitting and holds nails and glue firmly.

Engelmann Spruce is suitable for many building uses such as sheathing, subflooring, framing, ceiling and siding. It works up satisfactorily for interior finishing, mill work, industrial boxes and crates. The tight knotted boards are often used for knotty paneling particularly where a wood of light color and rather inconspicuous knots is desired.



For more information about Engelmann Spruce, send for free illustrated Facts Folder and Grade Use Guide. Address
WESTERN PINE ASSOCIATION
Yeon Building • Portland 4, Oregon

THESE ARE THE WESTERN PINES

THESE ARE THE ASSOCIATED WOODS

WOODS FROM

Idaho White Pine,
Ponderosa Pine, Sugar Pine

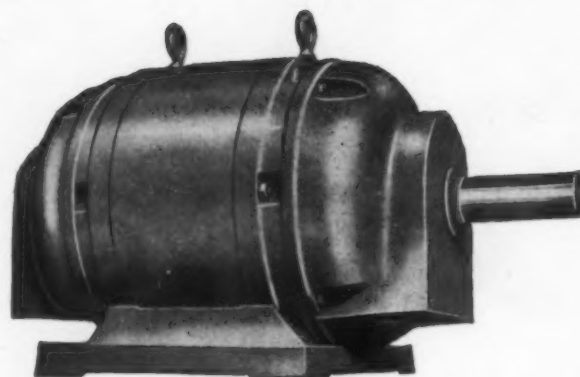
Larch, Douglas Fir, White
Fir, Engelmann Spruce,
Incense Cedar, Red Cedar,
Lodgepole Pine.

THE WESTERN PINE REGION



VALLEY BALL BEARING MOTORS

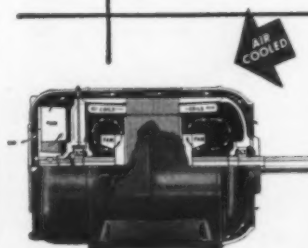
STAY ON THE JOB... **LONGER**



When specifying the power unit
for your machinery, bear these
exclusive VALLEY features in mind!

- Specifically designed for 'round-the-clock' duty in high temperatures.
- Drip proof and splash proof, semi-enclosed construction protects motor from harmful liquids and flying particles.
- Fully enclosed ball bearings reduce friction 75% to provide a saving in power.
- Built in ½ to 75 horse power sizes for wide adaptability in your power planning.

VALLEY Motors, stay on the job longer, even under heavy and continuous power demands. Thus for economical power that will last the life of your equipment — always specify VALLEY.



TOTALLY ENCLOSED FAN COOLED

The latest development in Air-Cooled, Ball Bearing motors. Totally enclosed to assure protection against dripping or splashing liquids, metal chips, and damaging dust. 2 to 60 h. p.

Write For Descriptive Literature.

VALLEY
ELECTRIC CORPORATION
4221 FOREST PARK BLVD. • ST. LOUIS 8, MO.

**DO YOU
NEED**

- **SMALL STAMPINGS**
- **PRECISION ASSEMBLIES**
- **METAL LITHOGRAPHING**
- **ENGINEERING ASSISTANCE**

DEFENSE CONTRACTS WANTED

We have equipment and experience to handle contract orders
FAST • ACCURATELY • IN QUANTITY

Modern, humidity controlled, 6 acre plant can produce stampings to close tolerances . . . in steel, aluminum, brass and gilding metal, plain or lithographed in multi-million quantities. Facilities and labor for assembling precision parts. Trained design, production and metallurgical engineers. Experience in defense contracts. Have produced bomb fuses, metal containers, ammunition components. Excellent packing and shipping facilities.

For descriptive brochure and quotations call your nearby Alcoa Sales Office or write . . .

ALUMINUM SEAL CO., INC.

Box 331C, Richmond, Ind.

SUBSIDIARY OF ALUMINUM CO. OF AMERICA

Unpackaged merchandise lacks a good salesman...



FORMULA for

Solicit Contacts
Arouse Interest
Limit Competition
Establish Preference
Seal the Sale

Your Package Helps Make the Sale



Plants
Throughout
the South

Box Company, Inc.

Charlotte, North Carolina

APRIL, 1951

Please mention **PURCHASING Magazine** when writing to advertisers.

**FACTS &
FIGURES
No. 14**



JOMAC GLOVES

**picked by maker of electrical
conduit boxes because of washability**

A large manufacturer of electrical conduit boxes* formerly threw away all soiled work gloves. Today he reports great savings with Jomac Gloves, which are laundered over and over.

*Name on request.

★ ★ ★

You get a new pair of gloves for the price of the wash, when you use Jomac Work Gloves. One of the biggest money-saving features of the Jomac is its washability. Oil-soaked or dirty gloves can be washed or dry-cleaned and come out flexible and as good as new. Jomacs are reversible, too. Any two gloves are a pair. Jomacs are long-lasting. They outwear ordinary gloves by 7 to 1. Jomacs protect workmen's hands against heat or cold, rough or sharp edges. Save money. Increase the efficiency of your workmen with Jomacs, the original terry cloth work gloves.

C. WALKER JONES CO.

6135 N. LAMBERT STREET

PHILADELPHIA 38, PA.

LETTERS . . .

COST OF PURCHASING

We are doing a little research work on a problem with which we feel that you can probably give us some help. Sometimes we wonder whether we are spending enough money in our Purchasing Department. On the other hand, we may be spending too much. Has any research work been done on this subject?

W. M. Hanson, Manager
Market & Production Research
Four Wheel Drive Auto Co.
Clintonville, Wis.

● For the purpose of comparison with prevailing experience and costs, see the survey reported in the September, 1950, issue (*What Does It Cost to Spend a Dollar? What Does It Cost to Issue an Order?*). We do not hold that these criteria alone are a proper means of what operating costs should be. In fact, there is a wide variation in the costs as reported, probably due to variations in the scope of purchasing responsibilities, plus variations in accounting procedures as to what is included in the costs. However, the survey represents the most comprehensive current study of the situation.

For a discussion of how much should be spent, see the article by B. D. Henderson in the December, 1950, issue (*Personnel for Profits*). In this article, the problem is approached in terms of a breakdown of department operations into clerical, service, and cost-saving functions. In the first two categories, cost should be held to a minimum consistent with required performance. In the third category, the experience of Westinghouse Electric Corporation indicates that additional expenditures in personnel and facilities may represent a very profitable investment for the company. We commend this article as a very constructive approach to the subject.—Ed.

DEFENSE ORDERS

In the February issue of *PURCHASING* on Page 320, you answer a question submitted by R.R., Sales Manager. The question is, "May the seller select his customer?" Your answer is based on Section 11.10 of NPA Regulation 2. We would very much like to accept your answer, and are not in any way trying to find fault.

In Paragraph 4 of your reply, three conditions are mentioned under which the seller may select his customer, but in the original regulation there seems to be only one condition, the first one, and the other two are additions to the first. Of course, this will be clear if the original paragraph is read in the regulation. On this basis, a seller may not refuse a customer purely on the third condition—"if the order can readily be filled by another seller who has usually accepted and filled such orders."

We have been faced with this problem wherein a competitor's customer has approached us with a DO order where we have reason to be sure that our competitor has not reached the limit of DO's he may accept.

Would appreciate your comments.

T. E. Soldat, Purchasing Agent
Mutual Chemical Co. of America
New York, N. Y.

● Further checking with an official of the National Production Authority produced this interpretation: There is nothing in the regulation which gives a supplier the right to turn down a DO even though he may have reason to believe that the regular supplier of the customer has not accepted orders up to his DO ceiling. The supplier may ask the customer to place his order with his regular supplier, and indicate that the order will be accepted if the regular supplier has reached his DO ceiling. But if the customer insists on placing the order, it must be accepted.—Ed.

MUNICIPAL PURCHASING

Please send available information pertaining to municipal purchasing systems.
Otto R. Winter, Purchasing Agent
City of Bristol
Bristol, Conn.

● See issue of May, 1950 (*Wichita Has a Purchasing Manual*); also December, 1950 (*More Value for the Tax Dollar*).

Information is available from the National Institute of Governmental Purchasing, 730 Jackson Place, N. W., Washington, D. C., and from the National Association of Purchasing Agents, 11 Park Place, New York, N. Y. General principles are outlined in standard texts, such as "Purchasing", by Heinritz, published by Prentice-Hall, Inc., 70 Fifth Avenue, New York, N. Y.

ELECTRIC TYPING

In the February issue of *PURCHASING* there is an article by H. E. George on the great efficiency of electric typewriters.

As central purchasing agency for the State of Texas, we have had numerous requests for electric typewriters. We have tried to purchase these only where we feel that they are warranted and can pay their way over and above the cost of manual machines. Needless to say, we have been bombarded by many statements of enormous savings obtained through using electric machines.

The sub-title of the article states that the production increases range to 40%, though typing station cost is increased but 1%. The article further states, "for straight letter writing, this increase will conservatively approximate 20 to 25%."

Previous to this date, we had seen general articles on this subject without any factual support, quoting large savings. But the only factual data that we have been able to obtain is that Pitney-Bowes and one other company had established time-study rates for operators sitting side by side with manual and electric machines, and that they adjusted rates 6 and 7% in the above companies for the reduced fatigue on the electric machine.

We are really searching for some factual information. We do not want to restrict purchases where they are justified, but on the other hand, we have an obligation to spend the taxpayers' money judiciously.

Hall H. Logan
State Board of Control
Austin, Texas

● Mr. George's article was based on a variety of sources, including both manufacturers and users of electric typewriters. The experience of our own typing department, where both manual and electric machines are used, supports the statement that electric typewriters make possible a 20 to 25% increase in production. The work is faster and neater, with fewer errors and less fatigue.

The 1% increase in typing station cost is based on an average annual cost of \$2,400 per station, including the operator's salary, overhead, supplies, and machines. Amortized over a five-year period, the cost of the manually operated typewriter is about \$33 per year, or 1⅓% of the total; for the electric typewriter, this figure is about \$58 per year, or 2⅓%.

Can this clue
to quality be found



Can you find the clue...



...to quality? X marks the spot...



Yes! a PHILLIPS SCREW

It's easy to tell whether a product has been assembled with engineered tightness at vital fastening points. Just look for Phillips Screws. You'll know them by the identifying X formed by the cross-recess on the head of each screw. It's your clue to quality construction on the widest range of products, from television sets to aircraft.

PHILLIPS Cross-Recessed-Head Screws
as sold at hardware, automotive
and mail supply outlets

Part of the series of
advertisements on
Phillips Screws appearing
in *The Saturday
Evening Post*.

PHILLIPS SCREWS, with their identifying X formed by the cross recess, are recognized on sight as a mark of quality in well built products. The general public knows that Phillips Cross-Recessed-Head Screws make products stronger, better looking. 14 million readers of *The Saturday Evening Post* are being told that when it comes to assurance of quality, X marks the spot.

These screws cut driving time up to 50%, set up tighter, resist vibration. They are distinctively designed to give maximum strength of head, maximum driver strength. They eliminate driver skids and split screw heads. Whether you use Phillips wood screws, machine screws or tapping screws, you build a better product and you save time, work, money.

PHILLIPS Cross-Recessed-Head SCREWS

X marks the spot... the mark of extra quality

AMERICAN SCREW CO. • THE BLAKE & JOHNSON CO. • CAMCAR SCREW & MFG. CORP.
CENTRAL SCREW CO. • CONTINENTAL SCREW CO. • ELCO TOOL & SCREW CORP.
GREAT LAKES SCREW CORP. • THE H. M. HARPER CO. • NATIONAL LOCK CO. • PARKER-KALON CORP.
PHEOLL MANUFACTURING CO. • ROCKFORD SCREW PRODUCTS CO. • SCOVILL MANUFACTURING CO.
SHAKEPROOF INC. • THE SOUTHTONING HDWE. MFG. CO. • WALES-BEECH CORP.



THE FASTENERS OF TODAY... AND OF THE FUTURE

EFFECT OF DRY CHEMICALS IN PUTTING OUT MOTOR FIRES

The fire extinguisher division of the Ansul Chemical Company has just published a technical bulletin (no. 9) explaining the effect of dry chemical in putting out fires in electric motors and generators.

After the flames have been extinguished, the bulletin says, the windings

and framework may be covered with a deposit of dry chemical, but this residual is easily removed with an air stream or brush.

Confirming that dry chemical may be blown from the windings without disassembling a unit, the bulletin cites a fire in a diesel-electric locomotive just before it left on a transcontinental run. Burning oil adjacent to the generators was quickly extinguished by dry chemical

before any structural damage was done.

Despite the fact that no maintenance or cleanup work was done, the locomotive made the trip to the west coast and return without experiencing any difficulty.

Copy of bulletin No. 9 may be obtained from the Engineering Department Fire Extinguisher Division, Ansul Chemical Co., Marinette, Wis.

BUYER'S & SELLER'S MART

Contract Work • Equipment For Sale • Employment and Business Opportunities

RATES

Undisplayed (set solid)	90¢ line
Positions Wanted	45¢ line
Displayed	\$8.50 inch

REQUIREMENTS

Undisplayed (want-ad style), minimum charge 4 lines, prepaid. Figure forty-four letter spaces (five average words) to a line. Add one line for box number address; replies forwarded without charge. Discount of 10% for twelve consecutive displayed insertions. Forms close 15th of month preceding date of publication.

Send orders to: CLASSIFIED DEPARTMENT • PURCHASING • 205 E. 42nd St., New York 17, N. Y.

POSITIONS WANTED

PURCHASING AGENT—Wide experience 18 years industrial purchasing for metal trades. Wide acquaintance among Executive Personnel at Mill levels. Best of vendor relations. Capable organizer experienced in Civilian and Defense Buying. Best of references. Will relocate, prefer New England or East Coast location. Resume and references on request. Box 1304, PURCHASING 205 E. 42nd St., New York 17, New York.

PURCHASING AGENT OR ASSISTANT

Young, Agressive, Capable, with zest for responsibility. Engineering and Business training. Manufacturing background: production, stock control, raw materials, supplies, equipment. Developed procedures, sources and product promotion. Experienced government contracts. Prefer overall responsibility small or medium organization. NAPA member. Relocate. Resume upon request. BOX 1305, PURCHASING 205 E. 42nd Street New York 17, New York.

Energetic Purchasing Agent, young, seasoned, heavy experience in corrugated cartons, plastic film. College Graduate. Veteran. Box 1300, PURCHASING, 205 E. 42nd St., New York 17, N. Y.

NePSCO NEW ENGLAND PRESSED STEEL COMPANY

Contract Manufacturers since 1914
of "Trouble Free"

METAL STAMPINGS
SPECIALTIES — APPLIANCES
For Industrial and Domestic Users

P. O. BOX 29
NATICK, MASSACHUSETTS

LETTERHEADS •

\$15.00

PER
1000

Without cost or obligation we will redesign your present letterhead and submit proof for your inspection — Free Dies—prices on larger quantities on request.

ENGRAVED

Genuine engraved business cards designed FREE from your own copy. Genuine leather case sent free with each order—shipment seven days after your O.K.

\$9.00

PER
500

THE CLARK COMPANY : 150 Bank St. : Burlington, Vt.

WANTED SURPLUS ABRASIVES

Sheets - Rolls - Belts

in

Aluminum Oxide - Silicon Carbide

- Garnet

Submit Your Offering

ROYALE ABRASIVE CO.

1550 N. Dayton St., Chicago 22, Ill.

HELP WANTED

Purchasing Agent—Large General Contractor on Atlantic Seaboard wants a purchasing agent experienced in purchasing and expediting construction materials and equipment, subcontract and specialty items. Reply immediately stating age, education, experience, references and when available. Permanent position for qualified man. Will discuss salary when interviewed. Reply Box No. 1287, PURCHASING 205 E. 42nd St., New York 7, N. Y.

FOR SALE

New Office Equipment: typewriter tables, stands, posture chairs, ash trays, smokers, trimming boards, etc. we can deliver. Write for FREE catalog on letterhead; prices. Gerard Products, 79 E. Elm St., Chicago 11, Ill.

BEST BUYS IN USED MACHINERY

FOR THE
PROCESS INDUSTRIES

including
Chemical
Paint, Food,
Rubber, Plas-
tics, Sugar,
Drugs, Cosmet-
ics and allied
fields.

WANTED

Idle or Surplus
Machinery for
immediate pur-
chase or liqui-
dation. Single
items to com-
plete plants.
Send list.



THE KEY TO SAVING TIME AND MONEY
CONSOLIDATED

PRODUCTS COMPANY, INC.
16 Park Row, N. Y. 7 BR 4047-7-0600

BONDED • PROMPT • PAYMENT

guaranteed on steel plates and sheets for immediate shipment at a right price today, offered by J. D. Marks' son Donald Marks of Donald Marks Steel Co., 935 Schofield Building, Cleveland 15, Ohio. TOWER 1-2340.

BIG JOB



WHEN YOU NEED
BRASS OR COPPER
FOR DEFENSE ORDERS
CALL **Chase!**

...OR
SMALL



DON'T let a defense order lag for want of brass or copper. Call your nearest Chase warehouse and inquire about our deliveries.

There are 23 Chase warehouses in large industrial cities from coast to coast, and Chase mills in the east and midwest. Get in the habit of calling on these great Chase facilities for service on your brass and copper requirements for "DO" orders.

Mill shipments are favorable. Warehouse deliveries are usually prompt. In fact, we can oftentimes fill a "DO" order right from warehouse stock.

● CHASE TECHNICAL SERVICE

Our technical engineers are familiar with military specifications for Brass & Copper for ordnance components, and will be glad to consult with you on the selection of these metals for defense orders.

Chase **BRASS & COPPER**

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

• The Nation's Headquarters for Brass & Copper

Albany†	Cleveland	Kansas City, Mo.	New York	San Francisco
Atlanta	Dallas	Los Angeles	Philadelphia	Seattle
Baltimore	Denver†	Milwaukee	Pittsburgh	Waterbury
Boston	Detroit	Minneapolis	Providence	(Sales office only)
Chicago	Houston†	Newark	Rochester†	
Cincinnati	Indianapolis	New Orleans	St. Louis	

Advertisers



IN THIS ISSUE

A	
Abbott Ball Co., The	332
Accurate Spring Mfg. Co.	265
Acme Steel Co.	139
Ahlberg Bearing Company	218
Air Express Div., Railway Express Agency, Inc.	28
Air Reduction Sales Co. & Subsidiaries	220, 221
Alemite Div., Stewart-Warner Corp.	158, 159
Allen Mfg. Co.	284
Allison Company	308
Aluminum Seal Co., Inc.	335
American Brake Shoe Co., National Bearing Div.	175
American Chain & Cable Co., Inc.	66, 150
American Die Casting Institute	261
American Lithofold Corp.	197
American Optical Co.	341
American Screw Company	303, 337
American Steel & Wire Company	63
American Telephone & Telegraph Co.	172
Anchor Post Fence Co.	142
Apex Machine & Tool Company, The	38
Arrow-Hart & Hegeman Electric Co., The	260
Art Metal Construction Company	196
Atlantic Steel Castings Company	326

B	
Babcock & Wilcox Tube Co.	301
Baldor Electric Co.	242
Baldwin-Hill Company	30
Barreled Sunlight Paint Co.	243
Bassick Co., The	344
Bay State Abrasive Products Co.	157
Bay State Tap & Die Co.	292
Bead Chain Mfg. Co.	234
Beall Tool Div., Hubbard & Co.	168
Behr-Manning Corp.	247
Bemis Bro. Bag Co.	16
Bendix Aviation Corp., Skinner Purifiers Div.	156
Best Pencil Company, Richard	198
Bethlehem Steel Co.	329
Billings & Spencer Co.	278
Blake & Johnson Co., The	337
Blaw-Knox Co.	144
Bond Foundry & Machine Co.	114
Boorum & Pease Co.	200
Boston Woven Hose & Rubber Co.	48
Bridgeport Brass Co.	325
Brighton Screw & Mfg. Co., The	134
Bristol Brass Corp.	174
Brown Company	309
Brown & Sharpe Mfg. Co.	287
Buffalo Bolt Co., Div. of Buffalo Eclipse Corp.	31
Bundy Tubing Co.	180

C	
Camcar Srew & Mfg. Co.	337
Carborundum Co., The	295
Carpenter Steel Co., The	8
Central Screw Company	337
Century Electric Company	1
Chain Belt Co.	177
Chase Bag Co.	145
Chase Brass & Copper Co., Inc.	339
Chicago Metal Hose Corp.	238
Chicago Screw Company	308
Chicago Wheel & Mfg. Co.	282
Cities Service Cos.	41
Clark Bros. Bolt Co.	150
Classified Advertising Section	338
Cleveland Cap Screw Co.	268
Cleveland Container Co., The	304
Cleveland Twist Drill Co.	257
Cold Metal Products Co.	119
Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div.	40
Columbia Ribbon & Carbon Mfg. Co., Inc.	195
Columbia Steel Co.	63
CONOVER-MAST PURCHASING DIRECTORY	324
Consolidated Business Systems, Inc.	198
Continental Diamond Fibre Co. 3rd Cover	
Continental Screw Co.	262, 337
Continental Steel Corp.	251
Copperweld Steel Co.	293
Corbin Cabinet Lock Div., Amer. Hdwe. Corp.	188
Crane Co.	14
Crucible Steel Co. of America	275

D	
Darnell Corp., Ltd.	326
Davidson Rubber Company, The	300
Dayton Rubber Company	26, 27
Disston & Sons, Inc., Henry	252, 279
Dixie Leather Corp.	253
Dobeckmun Co.	332
Doehler-Jarvis Corp.	34, 35
Dolge Co., C. B.	322
Dravo Corp.	150
du Pont de Nemours & Co., Inc., E. I.	270
Duff-Norton Mfg. Co.	266

E	
Eagle-Picher Sales Co., The	162
Eaton Mfg. Co., Reliance Div.	223
Eberhard-Faber Pencil Co.	207
Edison Inc., Thomas A.	201
Elco Tool & Screw Corp.	337
Electric Auto-Lite Co.	129
Electric Storage Battery Co.	285
Emerson Electric Mfg. Co.	240
Emery Air Freight Corp.	224
Erie Resistor Corp.	6
Esterbrook Pen Co.	194

F	
Fairbanks, Morse & Co.	166, 167
Federal Electric Products Co.	215
Ferry Cap & Set Screw Co.	321
Flexible Steel Lacing Co.	316
Frasse & Co., Inc., Peter A.	307
French & Hecht Div., Kelsey-Hayes Wheel Co.	308
Fuller Brush Co.	160

G	
Garrett Co., Inc., George K.	60
Gates Rubber Co.	65
General Box Co.	55
General Chemical Div., Allied Chemical & Dye Corp.	255
General Electric Company Apparatus Div.	135, 136, 137, 138, 232, 233
Chemical Dept.	23
Lamp Div.	171
Water Coolers	254
General Motors Corp.	209
Georgia-Pacific Plywood & Lumber Co.	54
Gits Molding Corp.	154
Globe Steel Tubes Co.	133
Goodrich Co., B. F.	2, 213
Goodyear Tire & Rubber Co., Inc.	39
Gould-National Batteries, Inc.	211
Graton & Knight Company	253
Graybar Electric Co., Inc.	4
Great Lakes Screw Corp.	337
Grinnell Co., Inc.	17
Gulf Oil Corp.	9

H	
Hanson-Van Winkle-Munning	245
Hanson-Whitney Machine Co.	229
Harnischfeger Corp.	10
Harper Company, H. M.	176, 337
Harrisburg Steel Corp.	228
Hartzell Propeller Fan Co.	143
Herbrand Div., Bingham-Herbrand Corp.	288
Hinde & Dauch Paper Co.	29
Hobbs Mfg. Co.	288
Hodell Chain Co., Div. National Screw & Mfg. Co.	310
Howard Industries, Inc.	152
Hudson Pulp & Paper Corp.	42
Hy-Pro Tool Company	170
Hy-Test Shoe Co., Div. International Shoe Co.	239

I	
Independent Pneumatic Tool Co.	264
Indiana Glass Company	256
Industrial Tape Corp.	208, 306
Inland Steel Co.	3
International Business Machines Corp.	191
International Packings Corp.	253

J	
Jeffrey Mfg. Co., The	32
Jenkins Bros.	4th Cover
Johns-Manville Corp.	317
Johnson Bronze Co.	49, 50, 51, 52
Johnson Steel & Wire Co., Inc.	320
Jones Co., C. Walker	335

K	
Kaiser Aluminum & Chemical Corp.	297
Kalamazoo Label Co.	312
Kano Laboratories	294
Keasbey & Mattison Co.	277
Kennedy Valve Mfg. Co., The	318
Kex National Service	230
Keystone Steel & Wire Co.	290
Kidde & Co., Inc., Walter	219
Kimberly-Clark Corp.	227
Kurz-Kasch, Inc.	263

L	
Laughlin Co., The Thomas	246
Lavalle & Ide, Inc.	162
Link-Belt Co.	11
Lyon Metal Products Inc.	57

M	
Marsh Corp., Jas. P.	64
Master Electric Co.	291
Midwest Piping & Supply Co.	217
Mills Corp., Elmer E.	163
Milwaukee Dustless Brush Co.	148
Mine Safety Appliance Co.	18
Mione Mfg. Co.	310
Missouri-Kansas-Texas Lines	327
Monsanto Chemical Company	68
Morris Company, Bert M.	187
Morse Chain Company	331
Mueller Brass Co.	333

N	
National Bearing Div., American Brake Shoe Co.	175
National Electric Products Corp.	149
National Forge & Ordnance Co.	153
National Lead Co.	45
National Lock Co.	337
National Screw & Mfg. Co.	310, 315
National Supply Co., Spang-Chalfant Div.	25
Newark Wire Cloth Co.	342
New Process Screw Corp.	343
Nicholson File Co.	21
Norton Company	37, 238

O	
Oakite Products, Inc.	294
Ohio Brass Co.	121
Okonite Co.	283
Old Dominion Box Co.	335
Osborn Mfg. Co.	7
Oxford Filing Supply Co.	202

P	
Page Steel & Wire Div.	150
Parker-Kalon Corp.	56, 337
Pheoll Mfg. Co.	296, 337
Pittsburgh Plate Glass Company Brush Division	328
Columbia Chemical Div.	117
Potts Company, Horace T.	36
Powell Company, William	153
PURCHASING Magazine	302
Purdy & Co., Inc., A. R.	131
Pyott Foundry & Machine Co.	154

R	
Railway Express Agency, Inc.	46
Railway Express Agency, Inc., Air Express Div.	28
Randolph Laboratories, Inc.	286
Rathborne Hair & Ridgway Box Co.	62
Remington Rand, Inc.	199
Revere Copper & Brass, Inc.	165
Rhode Island Tool Co.	330
Richardson Co., The	319
Ridge Tool Co.	244
Rising Paper Co.	198



CUT HANDLING COSTS

with these

COMFORTABLE, HEAVY-DUTY AO GLOVES!

Where back of hand protection is not needed, AO 5X264 and 5X284 gloves can be real money-savers. Cotton fleece backs not only reduce the cost but add flexibility and comfort.

Both gloves are real heavy-duty types with heavier leather in the palm or work area and steel sewed seams. Leather palm extends over the heel of the hand, thus eliminating an uncomfortable bib patch while affording equal protection.

Other features of both gloves include absence of seams around index finger . . . a heavy, reinforcing

steel stapled strap around thumb crotch which reduces wear at a vulnerable point . . . heavyweight safety duck cuffs with heavy tape binding and elastic on back for snug fit.

Ask your AO Safety Products Representative for the 5X284 if you prefer seams on the back of the fingers rather than on the face, as in the 5X264. Costs are equally low and the leather of both gloves is chrome tanned cowhide.



SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES



NEWARK *Extra Fine* WIRE CLOTH

This NEWARK EXTRA FINE WIRE CLOTH is available in phosphor bronze, Monel, nickel, and stainless steel, in meshes up to #400 — yes, in Monel 400 meshes in each direction (160,000 holes per sq. in.).

Years of manufacturing experience in the wire cloth field (since 1877) is your assurance of the accuracy of NEWARK WIRE CLOTH weaving and quality of product.

NEWARK
for **ACCURACY**

**THE FINE
WIRE CLOTH
of**

Accuracy

Newark Wire Cloth

346 VERONA AVENUE
Newark 4, New Jersey

COMPANY

Roberts Rubber Co., Weldon	204
Rockford Screw Products Co.	337
Roebbing's Sons Co., John A.	
Cold Rolled Products	161
Wire Rope	59
Woven Wire Div.	324
Russell, Burdall & Ward Bolt & Nut Co.	43
Rust-Oleum Corp.	141
Ryerson & Son, Inc., Joseph T.	70

S

Safeguard Corp.	204
Sawyer & Son Co., The H. M.	282
Scovill Mfg. Co.	160, 337
Screw Research Association	337
Security Steel Equipment Corp.	205
Shakesproof, Inc.	337
Shenango-Penn Mold Co.	250
Sheppard Envelope Co.	202
Simonds Abrasive Co.	140
Simonds Saw & Steel Co.	271
Socony-Vacuum Oil Co., Inc.	47
Sorg Paper Company, The	183
Southington Hdwe. Mfg. Co., The	337
Spang-Chalfant Div., National Supply Co.	25
Sponge Rubber Products Co.	164
Stalwart Rubber Co., The	311
Standard Conveyor Company	146
Standard Pressed Steel Co.	241
Standard Register Co.	203
Standard Safety Equipment Co.	258
Stanley Works, The	304
Steinen Mfg. Co., Wm.	312
Sterling Bolt Co.	231
Strathmore Paper Co.	206
Strom Steel Ball Co.	300
Strong Carlisle & Hammond Co.	234
Sturtevant Co., P. A.	294
Sturtevant Mill Co.	269
Sun Oil Co.	273
Superior Foundry, Inc.	298
Superior Steel Corp.	259
Superior Tube Co.	173
Sylvania Electric Products, Inc.	53
Synthane Corp.	127

T

Taylor Fibre Co.	61
Taylor Co., Halsey W.	288
Technical Tape Corp.	330
Tennessee Coal, Iron & Railroad Co.	63
Texas Company	2nd Cover
Thermoid Company	305
Threadwell Tap & Die Co.	236
Timken Roller Bearing Co.	281
Torrington Company, The	169
Towmotor Corp.	146
Tri-Lok Company	150
Triplex Screw Co.	276
Trumbull Electric Mfg. Co.	299
Tube-Turns, Inc.	225, 226
Twitchell, Inc., E. W.	326

U

Uarco, Inc.	193
Udylite Corp.	147
Underwood Corp.	189
United Screw & Bolt Corp.	12
U. S. Radium Corp.	322
U. S. Rubber Company	237
U. S. Steel Export Co.	63
U. S. Steel Wire Spring Co., The	331
Upson-Walton Company, The	235

V

Valley Electric Corp.	334
Veeder-Root, Inc.	267

W

Wales-Beech Corp.	337
Walworth Co.	58
Wash-Rite Company	316
Washington Steel Corp.	313
Watertown Mfg. Co.	280
Weirton Steel Co.	44
Western Automatic Machine Screw Co.	332
Western Felt Works	333
Western Pine Association	334
Westinghouse Electric Corp.	178, 179, 248, 249
Westinghouse Electric Corp., Lamp Div.	33
Whitney Chain Co.	323
Wickwire Spencer Steel Div. of The Colorado Fuel & Iron Corp.	40
Wirebound Box Mfgs. Assoc.	151
Wisconsin Motor Corp.	258
Wolverine Tube Div.	289
Wrought Washer Mfg. Co.	228

Y

Yale & Towne Mfg. Co.	125
Youngstown Sheet & Tube Co.	123

LOOKING FOR

WAYS TO CUT COSTS —
AND SPEED ASSEMBLIES?

THEN LOOK CAREFULLY AT THE

TWIN-fast WOOD SCREW

REG. U. S. PAT. OFF.

Save assembly time

- twin threads drive twice as fast.

Save on screws

- greater holding power of TWINfast often means fewer or smaller sized screws can be used.

Save operations

- relieved shank diameter often eliminates necessity for drilling shank clearance hole.

Improve product

- tighter assembly and freedom from fractures and ruptures cut down rejects.

For anyone assembling plastic to wood, metal to wood or wood to wood, the TWINfast Screw adds up fast to lower production costs.

Get the complete story. Write to any of the companies listed below.

TWIN-fast

Reg. U.S. Pat. Off.

Pat. Nos. 2,314,390 2,314,391 2,373,878 2,373,846 2,492,180

The Faster Driving . . . Cost Cutting Fastener



you can
identify

TWIN-fast

Reg. U. S. Pat. Off.

by its
relieved shank
and twin thread



Furnished in either
Slotted or Phillips
Recessed Heads.

Blake & Johnson Company
Waterville 48, Conn.

Continental Screw Company
New Bedford, Mass.

National Screw & Manufacturing Company
Cleveland, Ohio, and Los Angeles, Calif.

Rivco, Inc.
Downey, California

Southington Hardware Manufacturing Company
Southington, Conn.

The Stowell Screw Co., Ltd.
Montreal, Canada

American Screw Company
Willimantic, Conn.



Caster Quiz

A "quick facts" feature with helpful suggestions on the use of casters . . . to reduce materials-handling costs, the "Reducible 30%"*

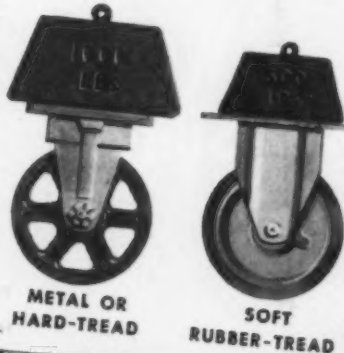
Q. How can light, portable equipment roll easier on rough floors or over obstacles?

A. On the amazing new Bassick "Flying Saucer" Caster. Its saucer-like 3" wheel, set at a 45° angle, rides over rough spots and obstacles equal to an ordinary wheel twice the size . . . with the extra asset of low overall height that cuts tipping danger. Low-cost. Ideal for shirt racks (below), shoe racks, garage equipment, etc.



Q. Should metal and rubber-tread wheels of equal size carry equal loads?

A. No. Figure that soft rubber-tread wheels should carry about 50% of the load carried by metal or hard-tread composition wheels of equal size.

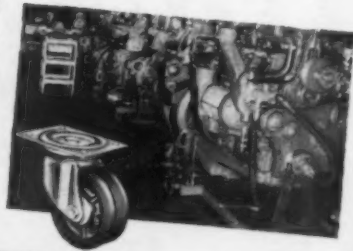


METAL OR
HARD-TREAD

SOFT
RUBBER-TREAD

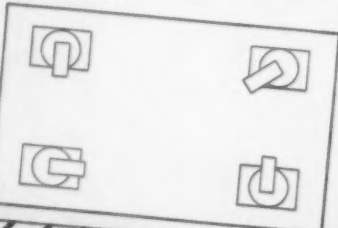
Q. Is there a simple way to set up a controlled-movement, easy-rolling assembly line?

A. Use Bassick Grooved-iron track, as Cummins Engine Company, Inc., successfully does in assembling its diesel engines. This low-cost scheme gives controlled flow, easy movement, great flexibility. Track is easily installed, self-cleaning.



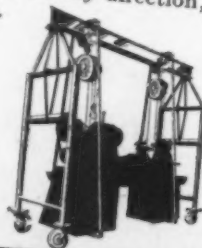
Q. When should only swivel casters be used on trucks?

A. For limited or confined areas where equipment must frequently move sideways to machines, bins, etc. This arrangement is not advised for long, straight travel, where a combination of swivel and rigid casters should be used for steering control.



Q. What's an easy way to raise and move heavy equipment?

A. A portable A-frame, on Bassick Casters, supports hoists, and can be moved throughout the plant to carry engines, heavy machine parts, etc. Bassick Heavy-Duty Casters (sizes for loads up to 10,000 lbs. or more per caster) add flexibility, in any direction, at any time.



WHAT'S YOUR MATERIALS-HANDLING PROBLEM?

We'll be glad to show you how Bassick Casters can help solve it, or to hear how you've used casters to deal successfully with a particular difficulty. We'll pay \$25.00 for any problem or case history that can be used in this advertising. Address the world's largest manufacturer of casters and floor protection equipment . . . THE BASSICK COMPANY, Bridgeport 2, Conn. Division of Stewart-Warner Corp. In Canada: Bassick Division, Stewart-Warner-Alemite Corp., Ltd., Belleville, Ont.

* According to cost analysts, materials-handling (about 30% of total cost) affords about the only real opportunities for cost reduction today.

Bassick

Making more kinds of Casters
... Making Casters do more



NEW C-D Silicone Dilecto

withstands an inferno of

**heat
and
electricity**

to improve product performance for you!

There are three new grades of C-D Dilecto* that can withstand temperatures as high as 250°C. They are chemically inert, silicone-glass laminated plastics that offer exceptionally high heat resistance and good arc resistance, extra strength, and positive moisture resistance! At Continental-Diamond we've literally lived and worked with Silicone Dilecto—perfecting it to a point where we believe it can be highly useful in

helping to solve your production problems — and improve product performance.

And this remarkable plastic is but one of many in the C-D family. They provide practical combinations of mechanical, electrical, and chemical properties—structural strength, light weight, positive moisture, heat and corrosion resistance. In hundreds of plants, C-D Plastics—Fibre, Vulcoid, Dilecto, Celoron, and Micabond—offer proof that it pays to see C-D first in your search for the right plastic for the job. For interesting, useful information on Silicone Dilecto, and other C-D high strength plastics, call or write your nearest C-D office, soon.



your partner in producing better products

*Dilecto GB-112-S
Dilecto GB-128-S
Dilecto GB-261-S

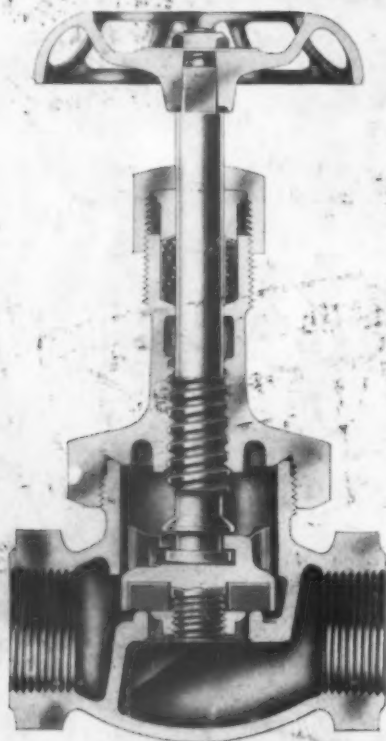
DE-2-49

BRANCH OFFICES: NEW YORK 17 • CLEVELAND 14 • CHICAGO 11 • SPARTANBURG, S. C. • SALES OFFICES IN PRINCIPAL CITIES
WEST COAST REPRESENTATIVE: MARWOOD LTD., SAN FRANCISCO 3 • IN CANADA: DIAMOND STATE FIBRE CO. OF CANADA, LTD., TORONTO 8

Continental - Diamond FIBRE COMPANY

Established 1895. Manufacturers of Laminated Plastics since 1911—NEWARK 41 • DELAWARE

NEW JENKINS VALVES for Safety and Economy in L.P.G. Services



APPROVED BY UNDERWRITERS' LABORATORIES,

SPECIAL DESIGN FEATURES provide high strength and trouble-free, tight closure to meet all tests

EXTRA HEAVY, REINFORCED BODY. Liberally proportioned construction, with reinforcing rib along center line, and heavy lug ends. Will take all ordinary pipe strains without distortion, and provides a factor of safety far above any L.P.G. service needs.

CROWNED SEAT Insures positive tightness required to meet N.B.F.U. test of 500 p.s.i. under seat when valve is closed.

IMPROVED COMPOSITION DISC Meets every test of L.P.G. service. Retains resilience through entire range of liquid and gaseous phases from -50 F. to +150 F.

DEEPER PACKING BOX. Extra deep packing box and spiral, lubricated packing material permits spindle to turn with minimum friction. Dependable seal at this point and at valve seat is assured without excessive effort on handwheel.

BEVELED SPINDLE SHOULDER Back seats against corresponding bevel at bottom of bonnet when valve is full open. Relieves pressure on packing material.

ALL OTHER PARTS SPECIALLY DESIGNED and proportioned to meet rigorous requirements of critical L.P.G. service. Construction features of Fig. 507 Check and Fig. 508 Angle same as Fig. 506 Globe.

Sold Through Leading Distributors Everywhere



Fig. 506 Bronze Globe
400 lbs. O.W.G. 1/4" to 2"



Fig. 507 Bronze Check
400 lbs. O.W.G. 1/4" to 2"



Fig. 508 Bronze Angle
400 lbs. O.W.G. 1/4" to 2"

Liquified Petroleum Gas (butane-propane), commonly known as "bottle gas", has become a popular domestic fuel, and is now being widely used in industry. Piping systems for handling these gases must be controlled by valves specially designed for this hazardous service.

These new Underwriters' Approved Jenkins Valves for L.P.G. service offer strength and safety well beyond specified requirements. They are built to the same quality standards that make all Jenkins Valves the economy-wise choice for any service.

Where Gate Valves are required for L.P.G. service, Jenkins Fig. 270-U offers the proper ratings.

Because of their superior safety features, Jenkins L.P.G. Valves are also recommended for air, gasoline, oil, and similar services where exceptionally rugged, specially tested valves are needed. For complete details and dimensions, get the new Jenkins L.P.G. Valve folder, Form 197. Use the coupon. Jenkins Bros., 100 Park Ave., New York 17, N. Y.

JENKINS VALVES

LOOK FOR THE DIAMOND MARK



Jenkins Bros.

The complete line of JENKINS L.P.G. VALVES are described in this new folder. Mail coupon today.

JENKINS BROS., 100 PARK AVE., NEW YORK 17
Please send L.P.G. Folder—Form 197

Name.....

Company.....

Address.....

